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Rock Products

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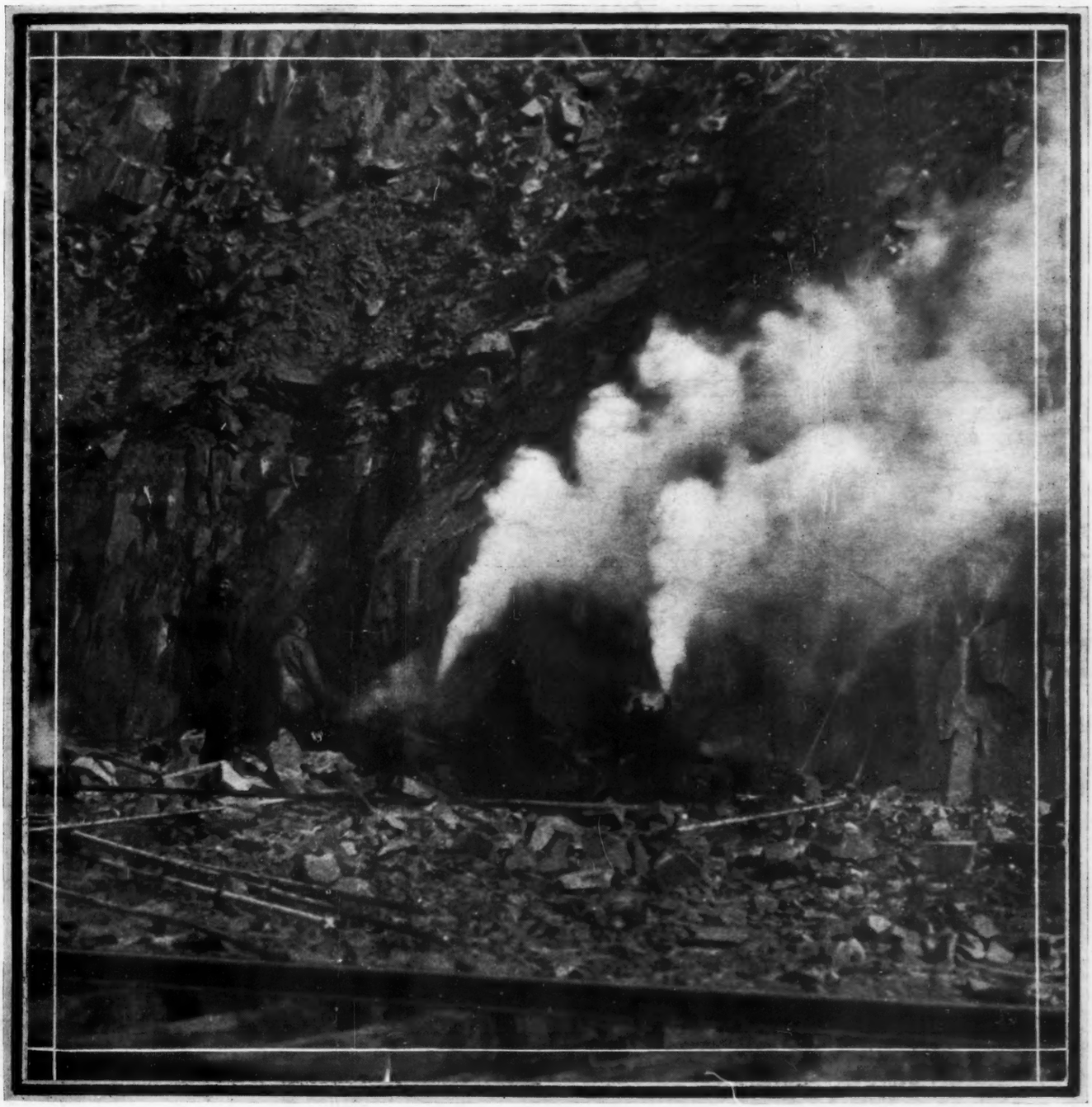
$2.00 A YEAR CHICAGO DECEMBER 18, 1918



Snake-Hole Drilling in a Connecticut Trap-Rock Quarry

KEYSTONE KILNS

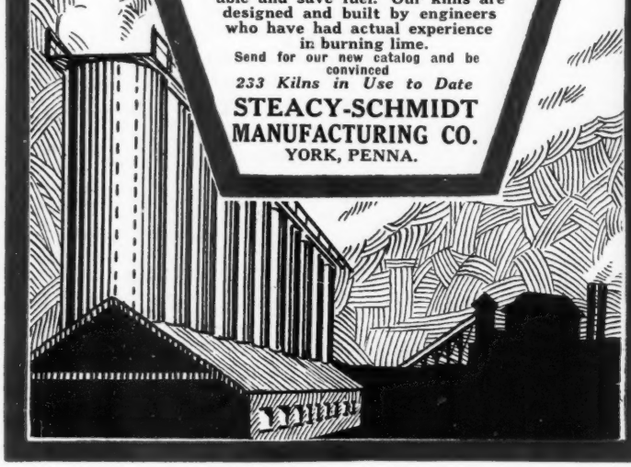
SAVE FUEL

Uncle Sam must practice strict economy and still have the best. That's why the Barrett Co., of Frankford, Philadelphia, Pa., have installed for the U. S. Government three Keystone Kilns, provided with scrubbers, to be used in the extraction of CO_2 gas for use in the manufacture of Phenol. The lime will be a by-product. We have a Keystone model to fit your particular requirements, give the best results obtainable and save fuel. Our kilns are designed and built by engineers who have had actual experience in burning lime.

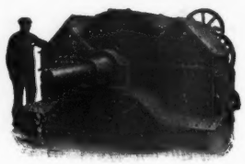
Send for our new catalog and be convinced

233 Kilns in Use to Date

STEACY-SCHMIDT MANUFACTURING CO.
YORK, PENNA.



"PENNSYLVANIA" Hammer Crushers



PATENTED

For Crushing and Pulverizing Lime, Limestone, Gypsum, Marl, Shale, Etc. Main Frame of Steel, "Ball and Socket" Self Aligning Bearings; forged Steel Shaft; Steel Wear Liners; Cage adjustable by hand wheel while Crusher is running. No other hammer Crusher has such a big Safety Factor.

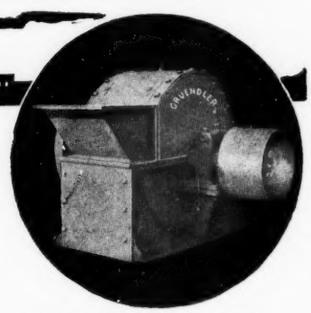
PENNSYLVANIA CRUSHER COMPANY
New York PHILADELPHIA Pittsburg

GRUENDLER
Crushers and Pulverizers

Increase your production approximately 50%.

Especially adapted for pulverizing LIMESTONE for agricultural purposes.

A most efficient machine for large production, small power consumption and BIG PROFITS.



The double-ended hammer arrangement is the reason—let us explain it.
Six sizes carried in stock.

GRUENDLER PATENT CRUSHER & PULVERIZER CO.
ST. LOUIS, MISSOURI

WHEELING WALL PLASTER COMPANY
WHEELING, WEST VIRGINIA

WHEELING WALL PLASTER UNIFORMLY GOOD

GYPSUM PRODUCTS
BUILDING SUPPLIES
ROOFING PRODUCTS

Car Loads and Local Shipments

PLEASING SERVICE

RUGGLES-COLES DRYERS

"Built to dry at the lowest ultimate cost"

LOW power and repair costs combined with small fuel consumption means economical operation. That's why over 650 machines are now in use—drying over 72 kinds of material, among them sand, rock, gravel, gypsum, coal and clay.

RUGGLES-COLES ENGINEERING CO.
50 Church St. NEW YORK
332 S. Michigan Ave. CHICAGO
WORKS: YORK, PA.

Saying "I saw it in ROCK PRODUCTS" will bring quick action.

Rock Products

TRADEPRESS PUBLISHING CORPORATION
542 SOUTH DEARBORN STREET
CHICAGO

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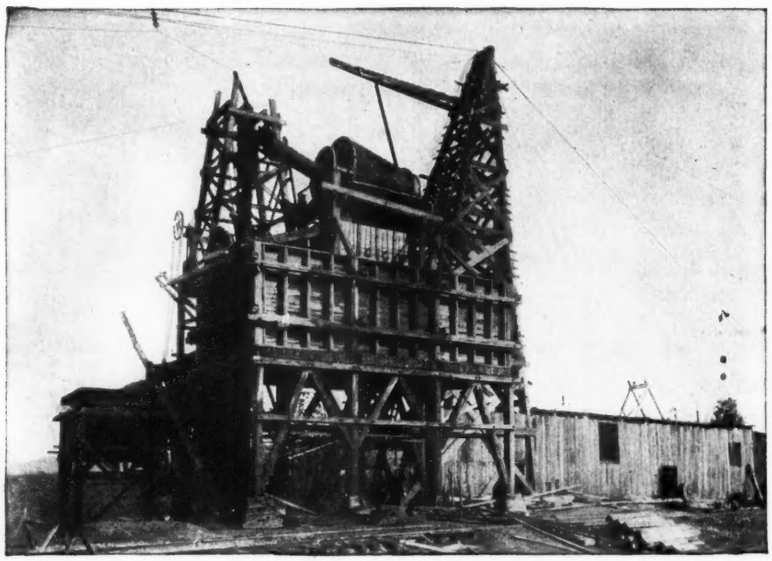


WEBSTER

Machinery for Conveying, Elevating, Screening, Washing, Storage and Power Transmission

Good Machinery Pays

Good machinery helps get out a better and more uniform product, that can be sold at a better price.

Such equipment cuts down the working force or increases production.

So there are two gains for the operator:—handling costs are less and per ton receipts are greater.

Good machinery pays.

That Webster machinery is the best of all good Elevating and Conveying Machinery is the opinion of the majority of users of Webster Equipment.

The company has a clean record of over forty years' steady growth.

You may be sure of machinery of the finest type if you come to Webster.

On the other hand, it would not be prudent business to buy any equipment without learning what Webster has to offer.

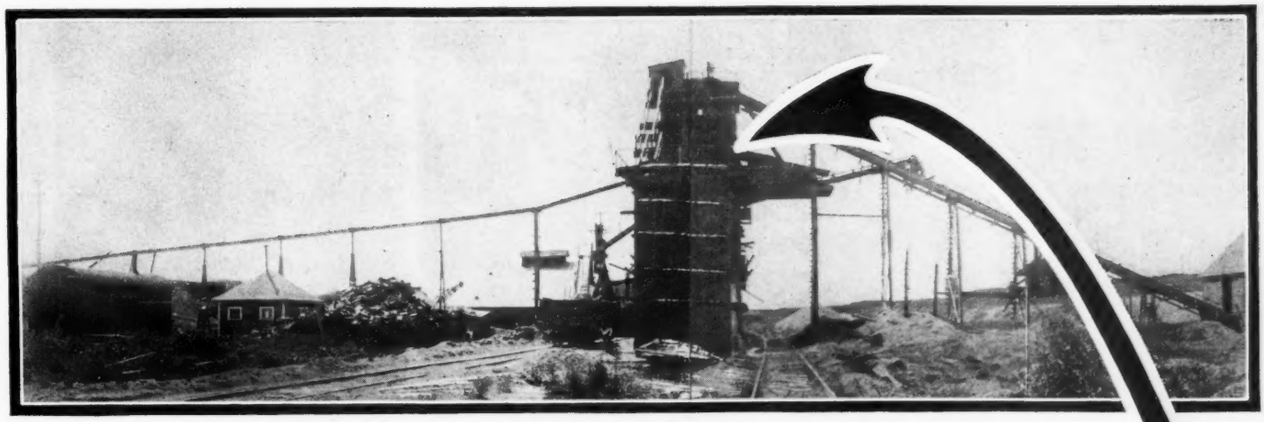
Catalog and engineering suggestions upon request.

The Webster M'f'g Company
Tiffin, Ohio

New York **Chicago**

(246)

Cooperation is the thing—please mention ROCK PRODUCTS.



PERFORMANCE

is the principal test

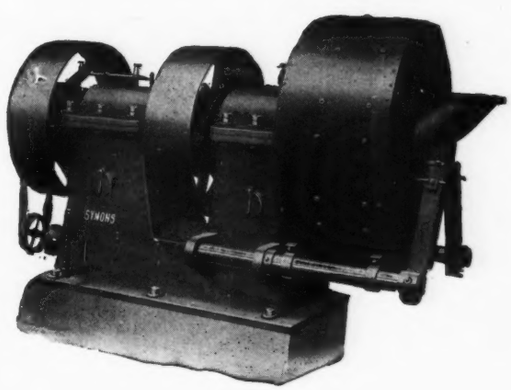
Our installation at the Atwood-Davis Sand & Gravel Co. plant at Beloit, Wis., is another instance where SYMONS DISC CRUSHERS have proved their worth through efficient and economical **performance,** but, the result of actual performance is the only argument that will **convince** you of their worth.

This company reports that for recrushing, the Symons Disc Crusher is superior to Jaw or Gyratory Crushers and in a plant where fine material is objectionable, this crusher is superior to Rolls on account of the better fracture and evenness in the size of product. The discs in this crusher show a wear of two years without replacing.

Our catalog explains why performance is the big factor. Write for it today.

CHALMERS & WILLIAMS

1425 Arnold Street
CHICAGO HEIGHTS, ILLINOIS



"The Master Crusher"

Saying "I saw it in ROCK PRODUCTS" will bring quick action.

Sterling Motor Trucks

Deliver on Time for Long or Short Hauls

There is a Sterling heavy-duty truck designed and constructed especially for every hauling requirement. Built in 2½, 3½ and 5-ton capacities worm drive—and the Super Sterling chain drive for heavy loads and bad roads—bodies for any specifications.

Write for Contract Hauling Facts

STERLING MOTOR TRUCK CO.
Builders of motor trucks exclusively for 11 years
Milwaukee, Wisconsin

Wood-Inlaid Frame Means Long Service

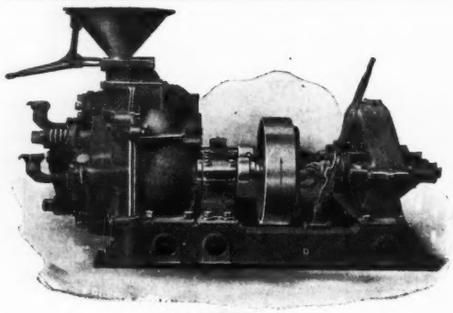
In Sterlings, vibration and upkeep are reduced to the minimum by our exclusive wood-inlaid shock-absorbing frame. No constant hammering on steel alone—bolts that stay tight and are noiseless are used in place of rivets that work loose and rattle.

Exclusive Sterling features justify the name "Sterling." Simplicity—sturdy contruction thruout.

Our well equipped distributors and service stations in leading cities properly represent factory standards and established service policy.

The Season's
Greetings
THERE is a feeling of good will and good cheer in our establishment which finds expression in a Holiday Greeting to our many friends and customers.
At this season we are reminded of our past pleasant business relations—of the many courtesies you have extended to us—of our own good feeling toward you.
We take this opportunity to wish you, one and all
A MERRY CHRISTMAS and
A HAPPY and VERY PROSPEROUS NEW YEAR
TRAYLOR ENGINEERING & MFG. CO.
ALLENTOWN, PA.
NEW YORK
30 Church St.
CHICAGO
Fisher Bldg.
LOS ANGELES
Citizens' Bank Bldg.
SPOKANE
Mohawk Block

STURTEVANT



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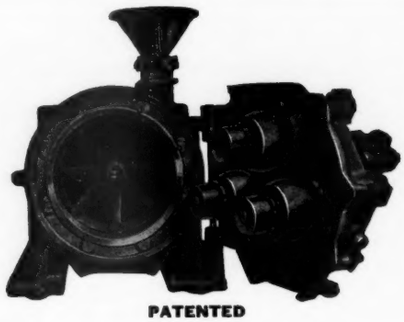

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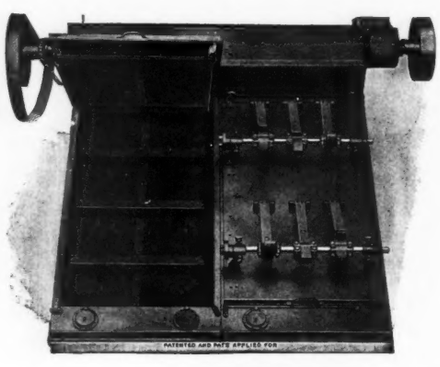
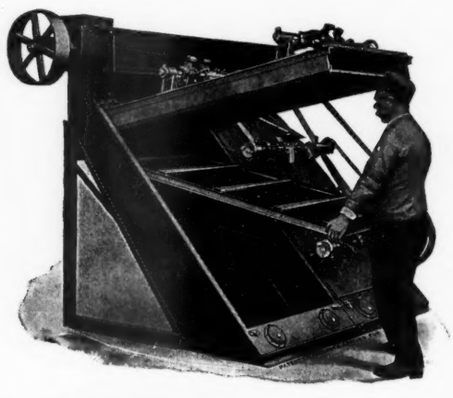
RING-ROLL MILLS

The most durable and efficient grinder for hard and moderately hard rock or ore. Used for the reduction of Cement-Clinker, Limestone, Quartz, Ores, Granite, Trap, Phosphate, Coal, etc., etc. Hundreds in use. RANGE OF OUTPUT 8—100 MESH.

Construction—"Open Door" accessibility, every part within quick and easy reach. Nothing to get out of order or give trouble. Small power, slow wear. Built in single and Duplex Designs—compact and convenient, steady runners. BUILT IN FIVE SIZES.

Action—Material passes through hopper and is delivered on inner surface of concave, revolving ring, where it is held by centrifugal force. Three convex Rolls are strongly pressed against this centrifugally held layer of material and revolve by friction against it. The Rolls thus roll over the material, first crushing it and then wedging it off of both sides of the ring.





NEWAYGO SUPER-SCREEN

Unit Construction—Each unit has screens 6 feet by 3 feet and is a complete Separator in itself. Each part is interchangeable and of the most efficient size for vibrating, capacity, handling, repair, etc. By simply bolting units together a Separator of any reasonable capacity may be obtained.

The Vibration is truly wonderful and yet nothing comes in contact with the fine wire cloth, except the material being screened. Hammers jar elastic bridges far above the screen cloth, which transforms these shocks into high-pitched vibrations, when transferred to the wire cloth. The scalper is also vibrated.

Screen Cloth Tensioning—The screen cloth is stretched taut and held taut, and the tension may be regulated locally or in its entirety.

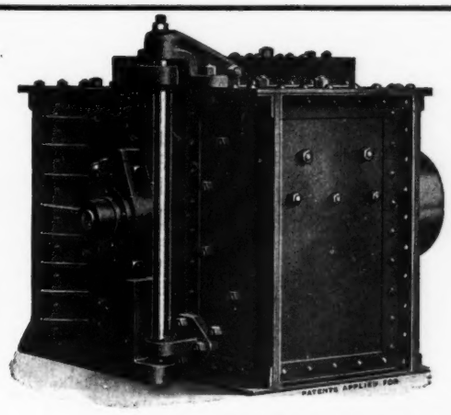
One Finger lifts the cover, and exposes the "Scalper" and Fine Screen. The "Scalper" slides into and is pulled out of the cover, like a drawer. The fine screen rests in the screen box, and is unobstructed by any mechanism, and is removed by simply lifting it out.

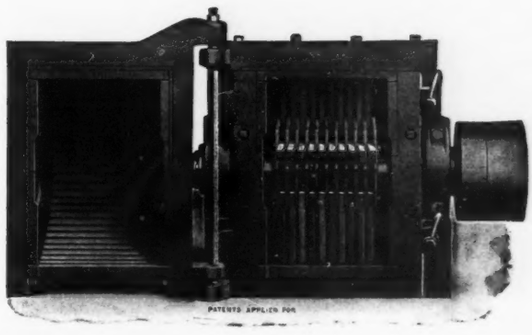
Accessibility, such as this, has heretofore been unknown.

STURTEVANT MILL CO.

You will get entire satisfaction if you mention ROCK PRODUCTS.

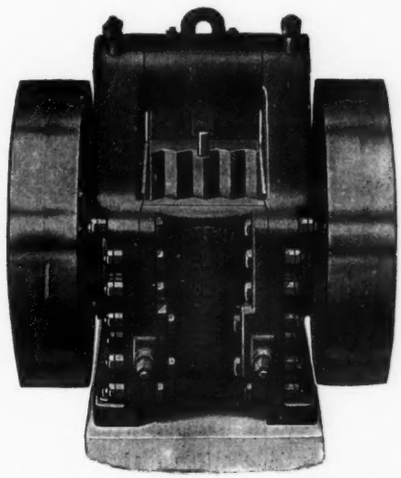
STURTEVANT





OPEN-DOOR PULVERIZERS

One man in one minute can get at every part for cleaning, adjustment, repair or for the removal of iron. Shutting down a plant is costly—accessible machinery minimizes delay. It requires minutes instead of hours to get at any trouble with Sturtevant "Open Door" Machinery. Continuous operation means economy, large production, profits and small operating costs. Labor is scarce and of poor quality—most of it is eliminated by machinery, which seldom requires attention, and when repairs must be made, a simple and accessible machine pays for itself many times over.



JAW CRUSHERS

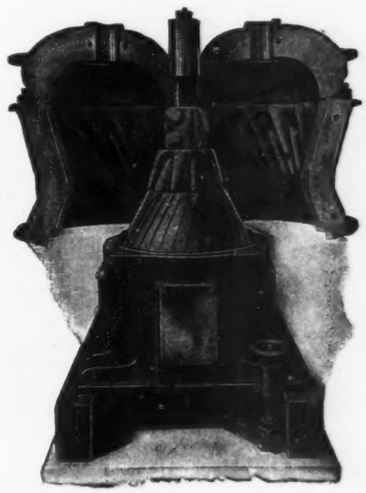
Action—Double Cam and Roll giving jaws two nips to each revolution of flywheels. Run at half the speed of others for same output. Slow speed means no hot boxes or bearing troubles and smooth, steady running—cheap foundations—long life.

Range of Output—6" to ½".

Uses—For crushing anything crushable, that is friable.

Jaw Sizes—2"x6", 4"x8", 5"x10", 8"x10", 6"x15", 10"x15", 6"x20", 12"x26".

Types—Coarse Crushers—Output: 2" to 6".
Intermediate Crushers—Output: 1" to 1½".
Fine Crushers—Output: ½" to 1".



ROTARY CRUSHERS

WITH OPEN-DOOR ACCESSIBILITY

Uses—For crushing large pieces of soft and moderately hard materials to 1" or to corn size and smaller. A most popular and widely used machine. Used largely as a preparatory crusher for Pulverizers.

Some of the materials being crushed in Rotary Crushers—Lime, Gypsum, Talc, Phosphate, Shale, Clay, Fullers Earth, Coke, Carbon, Chalk, Coal, Cement-Clinker, Sulphur, Caustic, Chemicals, Bauxite, Barytes, Oyster and Clam Shells, Colors, Facings, Brick, Salt, Soapstone, etc.

Sizes—Five. **Capacities**—½ to 20 tons per hour.

HARRISON SQ., BOSTON

The advertiser wants to know that you saw his ad in ROCK PRODUCTS.

Far *More* Than a Pension!

Never before in the world's history has any government so completely and adequately provided for its fighting men and their families.

The American soldier fights with a stout heart because he does not have to worry about the welfare of his dear ones back home.

For the Government has made the most business-like provision for their material comfort, security and happiness.

And it has instituted a great national service, the Home Service Section of the Red Cross, whose business it is to look after the interests of "the folks at home," and *to see that each soldier's family receives the full benefit of every provision made for it.*

The provisions made by the United States Government for the financial protection of sailors and soldiers and their families and dependents are as follows:

1. Monthly allotments and allowances for the families of soldiers and sailors.

Every enlisted man who has a wife or child is required to allot $15.00 a month from his pay. To this allotment made by the soldier himself the Government adds an additional allowance ranging from $5.00 a month for a motherless child, and $15.00 for a wife without children, up to a maximum of $50.00 a month.

In addition to the *required* allotments, the enlisted man may also make *voluntary* allotments to his parents, grandparents, brothers, sisters or grandchildren. If they are dependent upon him for support, the Government may add certain monthly family allowances.

If the enlisted man is already making a required allotment to his wife and children, he need allot only $5.00 additional to his brothers, sisters, parents, grandchildren and grandparents, if he claims a family allowance for them. But if he is not making a compulsory allotment he must allot $15.00 to such other relatives to obtain a Government allowance for them.

2. Compensation — monthly payment to officers and men, or their dependents, for disability or fatal injury.

This is the modern American substitute for the pension. It is even more liberal than the generous pensions granted Civil War veterans. It applies to every man in the military and naval services of the United States, regardless of rank or pay, and is payable for death or disability incurred in the line of duty.

In case of death, compensation, which ranges from $20.00 to $75.00 a month, is paid to the soldier's or sailor's widow, children, or dependent father or mother. No other relatives are entitled to compensation. The compensation may be paid to a widow until remarriage, and to a child until the age of 18, or until marriage.

In case of disability, compensation is payable to the disabled person himself. If the disability is total, the amount of compensation varies from $30.00 to $95.00 per month, according to the size of the disabled man's family.

If the disability is partial, the compensation varies both according to the size of family and to the reduction of the injured man's earning capacity.

Compensation for death and disability should be clearly distinguished from the Government insurance protection, which is entirely separate. Compensation is paid whether a man carries Government insurance or not. Government insurance is an additional and distinct form of protection.

3. Government Insurance—the most liberal and safest life insurance ever offered.

Government insurance covers death or total disability, during the war or afterward—while the insured is in service and after he leaves it. It is granted on written application to any person in active military or naval service, enlisted, enrolled, drafted, or commissioned.

Because the Government bears all overhead expenses and the extra war hazard, the cost is extremely low. The premium rate depends on a man's age, and averages between 60 and 70 cents per thousand per month.

A man may take out any amount he chooses up to $10,000. Already almost 4,000,000 officers and men have taken out insurance averaging more than $8,700.

In case of death of a person having, say, $10,000 insurance, the Government will pay, so long as there are persons living who are entitled to receive the same, monthly installments of $57.50, for twenty years, or a total of $13,800.

The insurance is payable only to child, grandchild, parent, brother or sister, wife or husband.

In case of total permanent disability in the case of a person having $10,000, these monthly installments of $57.50 each will be paid to the disabled person so long as he lives, even though he lives longer than twenty years.

The above is only a bare outline of the main features of the generous provisions of the War Risk Insurance Act, which is administered by the Treasury Department through the Bureau of War Risk Insurance.

Every soldier and sailor, and the families of all men in the service should provide themselves with full details of these three provisions for their security and protection, by applying at the earliest possible moment at the nearest local Home Service Unit of the Red Cross, where full information and literature will be supplied on request.

In addition to these specific provisions, *every Red Cross Home Service Unit is authorized to act*, in behalf of soldiers and sailors and their dependents, *in all matters of financial difficulty*, including:

1. Threatened lapse or forfeiture of insurance policy, either in life insurance company or fraternal organization.
2. Threatened loss of furniture, real estate or other property bought on installment plan.
3. Landlord and tenant troubles.
4. Unpaid back wages.
5. Inability to pay debts, notes or other maturing obligation.

This service is not charity!

It is only a just and partial repayment by the Government in behalf of the whole people for the devotion and self-sacrifice of Uncle Sam's soldiers and sailors and their families.

If you are a member of the family of a soldier or sailor, bear this in mind: *no matter what financial difficulties confront you, go quickly to the nearest Home Service Unit of the Red Cross and ask for advice and help.*

If you want information about delayed allotments, or the absence of news and letters from your men folk in camp or at the front, ask Home Service Unit about these things also.

Remember, the Red Cross Home Service has been organized to help you. You may ask freely for whatever information or assistance you require, *not as a favor but as your rightful due.*

The Red Cross Home Service Unit will give you every practical assistance in their power, because they are paid to do it, know how to do it and are glad to do it.

Don't hesitate, if you are in any doubt or trouble, Uncle Sam wants every soldier and sailor to know that his family and his folk at home are well looked after.

COMMITTEE ON PUBLIC INFORMATION, *8 Jackson Place, Washington, D. C.*

George Creel, *Chairman* The Secretary of State The Secretary of War The Secretary of the Navy

Contributed through Division of Advertising — U. S. Gov't Comm. on Public Information

This space contributed for the Winning of the War by

ROCK PRODUCTS

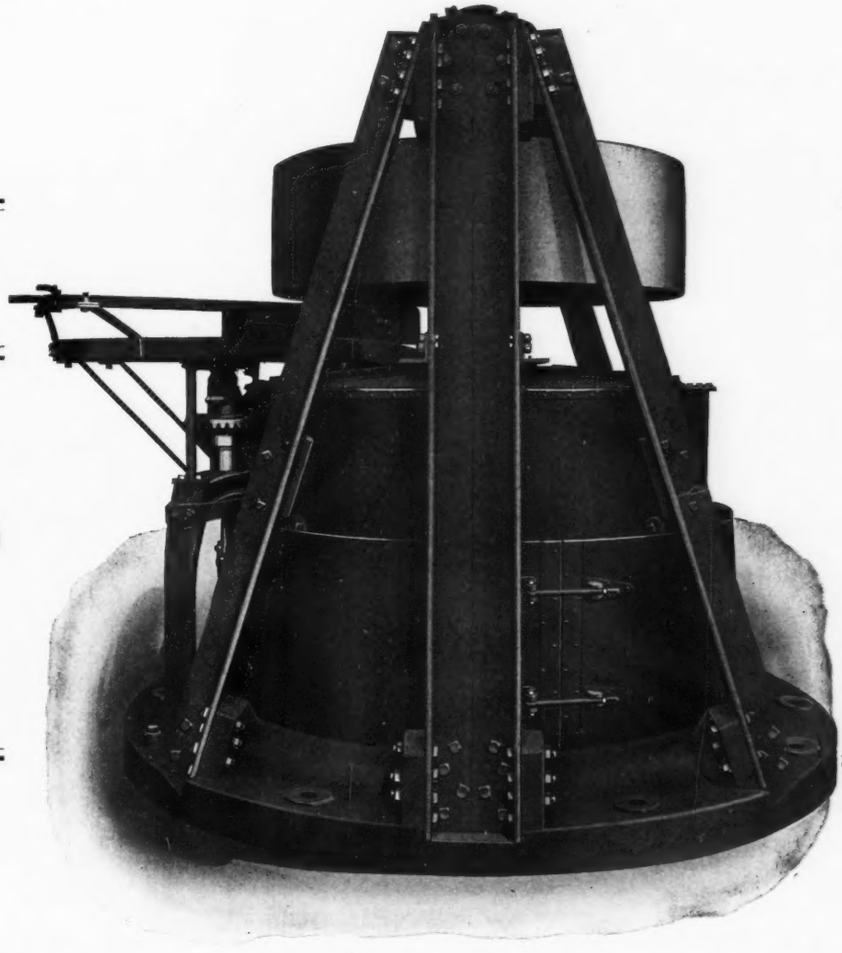
THE BRADLEY HERCULES MILL

This Latest Bradley Product is one worthy of investigation. Twenty-two of these big preliminary mills have been sold. No other new mill has ever equalled this sales record in such a short period. The BRADLEY HERCULES is a preliminary Pulverizer only—Never sold for finishing cement materials—But as a preliminary it is wonderful—Five years in operation—Not an experiment.

55-60% thru a 100

35% thru 200

98% thru 20



Limestone 30-40 Tons Per Hour

Clinker 130-175 Barrels Per Hour

Simple and economical in operation—Small power consumption per barrel. Increases the output of any tube mill—Saves Labor—Simplifies the Plant

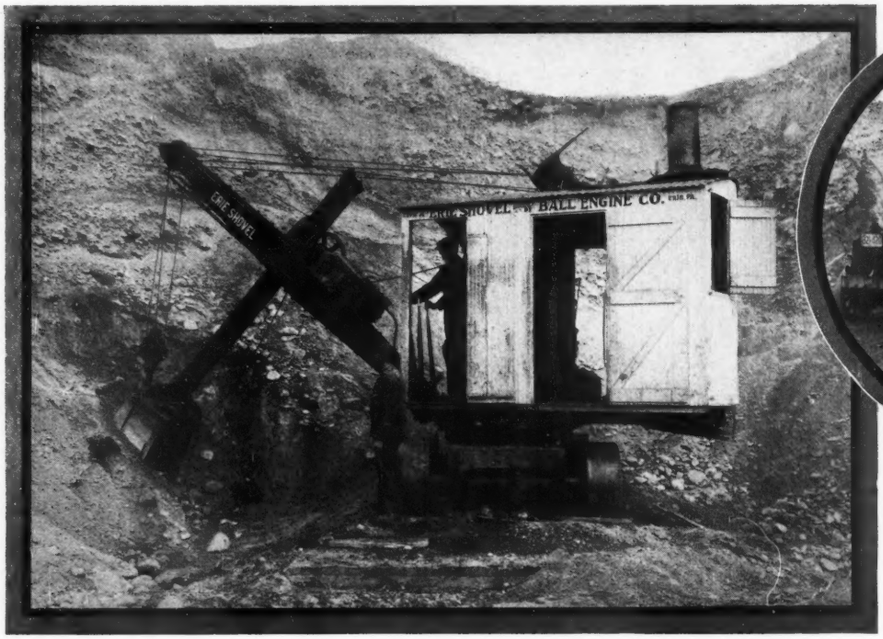
Why not investigate—Is an efficient Agricultural Limestone Producer as well as Cement Material Reducer

BRADLEY PULVERIZER COMPANY

Boston, Mass. **London, England** **Works, Allentown, Pa.**

Makers of the GIANT GRIFFIN AND BRADLEY 3 ROLL MILLS

It gets immediate attention if you mention ROCK PRODUCTS.



The two photos show a Type "A" ERIE Shovel owned by *P. COGGER, Producer and Dealer, crushed stone, sand and gravel; Lowell, Mass.*

In a recent letter, Mr. Cogger sums up his experience with this shovel:

"My Type 'A' ERIE Shovel has given me perfect satisfaction, and has done 50% more work than I expected. We are handling 300 cubic yards of gravel per day and the shovel is having an easy time."—*P. Cogger.*

Weighs only 13 tons, but has **plenty of Strength and Power**

Type "A" ERIE Shovel

DIPPER CAPACITY, ½ CU. YD. 3 dippers fill a 1½ cu. yd. wagon or car. 4 dippers fill a 2-yd. car.

RATED CAPACITY: 30 to 40 cu. yd. per hour. (Type "A" ½-yd. ERIES have often exceeded this rated capacity).

EXCAVATES 28 FT. 4 IN. WIDE at floor level, with boom at 47½ deg. (Cut is wider if boom is lower).

EXCAVATES 46 FT. 4 IN. WIDE at 8 ft. height, with boom at 47½ deg. (wider if boom is lower).

DUMPS 13 FT. ABOVE FLOOR LEVEL, with boom at 47½ deg. (Higher dump if boom is raised).

BOOM HOIST. Quickly raises or lowers the boom to the most effective digging angle.

3-LEVER CONTROL, same as the Type "B" ¾-yd. ERIE.

FULL REVOLVING—will turn a complete circle.

TWO - SPEED TRAVELING GEAR, giving an average speed of 1 to 2 miles per hour on low speed, and 2 to 3 miles per hour on high.

IMPROVED POWER STEERING, using the same principle which has been so successful on the Type "B" ¾-yd. ERIE.

TRACTION WHEELS OR CAR WHEELS, interchangeable on the same truck frame.

It is a REAL steam-shovel—but weighs only 13 tons in working trim! Light enough to move around in the pit easily and quickly—

but powerful enough to dig cemented gravel or the lighter shales, without blasting.

The above photo shows a 13-ton "A" ERIE which is giving excellent results for P. Cogger, producer and dealer, Lowell, Mass. Read Mr. Cogger's letter above.

The ideal machine for excavating sand or gravel deposits is the

Type "A" ½ yd. ERIE Shovel

It is rated to handle 30 to 40 cu. yds. per hour, but has done considerably more under favorable conditions.

It works steadily—in fact is absolutely dependable. Built along the same lines as our ¾-yd. Type "B" ERIE, of which there are more than 600 in service. The ½-yd. "A" is lighter, but weight considered is fully as good an excavator as the ¾-yd. "B." We need not say more, to any of the gravel producers who are using the "B"!

The first "A" ERIE has worked steadily for 18 months, and has given splendid service under all conditions, even with the thermometer 20° below zero. "A" ERIES are giving good service in gravel pits; excavating shale for brickyards; and on contracting work such as cellar excavation, trench digging, etc.

Let us tell you where you can see a ½-yd. "A" ERIE in your locality. Write for a copy of our new Bulletin P-A. Address:

BALL ENGINE CO., Erie, Pa.
Builders of ERIE Steam-Shovels and Locomotive Cranes; BALL Engines

ERIE Revolving Shovels BALL Engine Co. Erie, Pa.

Prompt attention will be given your inquiry if you mention ROCK PRODUCTS.

Rock Products

Vol. XXI Chicago, December 18, 1918 No. 17

Broadening Views of Industry

Atlantic City Convention a Demonstration of American Business Men's Ability to Acquire a Viewpoint Broad Enough to Include All Industry

EVERY PRODUCER in the rock products industries should read the address of Charles Warner of Wilmington, Del., on pp. 33-35 of this issue. It is a most full and comprehensive summary not only of the views and opinions of American lime manufacturers, but judging by the tenor of the various resolutions and other addresses, Mr. Warner's summary also senses the spirit of the entire convention, which was composed of leaders of practically every industry in America.

The sessions of the convention were an education and an inspiration to all who attended them, but perhaps more so to rock product producers than any others. It was the first time in history they had been called into conference and into association with steel and iron kings, coal and ore barons and great captains of industry too numerous to mention. For the first time they were made to feel at home in such company. The result must be that they are returning to their own home localities with more respect for their own industries than many men in these industries have sometimes shown.

The conclusions of the convention were such as to be expected from an assembly of successful American business men. They did not want to see any form of Government paternalism or regulation which will seriously interfere with individual initiative—the trait of American character, more than any other, that has made our nation truly great. They opposed Government ownership of railways, telegraph and telephone lines; they favored the repeal or modification of the Sherman anti-trust law, they favored further development of trade associations; they would make uniform cost-keeping compulsory in the different industries.

There was every evidence on the part of these men—representing initiative and capital—to deal liberally with labor, to take labor into partnership. The initiative and freedom of action they ask for themselves, they showed no disposition to deny to the lowest laboring man. If the laboring man can be made to have as broad a viewpoint and to show the same spirit of toleration and liberality, there isn't likely to be any serious labor problem.

The labor problem, as President Wheeler of the Chamber of Commerce has said, is no bigger than we make it. It is not necessary for wages to come down to reduce the costs of operation, at least in the rock products industries; greater efficiency of labor will accomplish wonders. Scarcity of labor during the war period has pointed the way to many economies and more efficient ways of accomplishing results.

Labor scarcity has also resulted in teaching many operators the valuable lesson that the greatest volume business is not the most profitable. Saving in wear and tear on machinery, the elimination of unnecessary labor, greater safety in operation have all contributed to give operators a fair profit on moderate tonnages with prices by no means higher than justified, even under peace conditions.

Mr. Warner's suggestions regarding future price fixing should be read with particular interest by cement manufacturers, sand, gravel and crushed stone producers who will be called upon to furnish material for public works. Price-fixing under such conditions would appear to have many advantages and would eliminate cut-throat competition for mere existence in favor of competition for service and quality.

There was no suggestion that the elimination of unnecessary and wasteful competition should be carried to extremes. As consumers of other materials every industry represented could see both sides of the problem and all were in favor of ample protection for the consumer and therefore the public at large.

Keep These Dates in Mind

AT the Atlantic City convention of all American Industry an unqualified endorsement was given the The Trade Association. Every industry now has a representative trade association. Membership in a national trade association is a business asset. If you are a rock products producer make it a point to be on deck at one or all of these annual conventions of the rock product trade associations:

NATIONAL ASSOCIATION OF SAND AND GRAVEL PRODUCERS,
Chicago, Jan. 28 and 29.

NATIONAL CRUSHED STONE ASSOCIATION,
Buffalo, Feb. 11 and 12.

THE LIME ASSOCIATION,
Pittsburgh, Feb. 12 and 13.

Attempt to Dictate Method of Federal Supervision Splits Road Congress

Gap Between State Highway Officials and Material Men Is Widened by Chicago Meeting

LESS THAN A YEAR AGO a grand attempt was made to coördinate all the interests devoted to highway construction—the engineers and officials who supervised the work, the contractors who built them, the material men who produced the essentials of construction, the machinery men who make the tools of construction, the motor vehicle owners who used the roads, the manufacturers who made the vehicles that ran over the roads and even the manufacturers who made the tires to fit the vehicles that ran over the roads—a veritable "House that Jack Built."

Jack was a good architect and his design was ideal, but the materials he has to work with are inherently weak—being not only individual numan nature but composite organized human nature in the form of strong trade associations whose interests, aims and ambitions are constantly at odds. It is true they all meet on the common ground of wanting roads improved, but when it comes to the point how they are to be improved no one of the interests involved is willing to whole-heartedly adopt a give-and-take policy. At least it does not appear so at this time.

A Famous Highway Resolution

Ever since the inception of the Highways Industries Association it has been antagonistic to the U. S. Office of Public Roads. It has consistently worked for a broader gauge bureau which would have more power to initiate projects, but there was nevertheless a strong under-current of dissatisfaction with the conduct of Federal Aid road work under the Department of Agriculture—a feeling pretty generally shared by all good roads enthusiasts.

This feeling had an outcrop in the original meeting of the Highway Industries Association last winter and again showed itself in the attempt to have the Chamber of Commerce of the United States adopt a resolution at its convention in Chicago last summer declaring for a change in the method of Federal highway supervision. It was voted down there. At the recent Atlantic City convention of the war service committees of the various industries under the auspices of the Chamber of Commerce of the United States a similar resolution was killed by the clearance committee of the convention after being endorsed by practically all the group meetings.

At a meeting of the American Association of Highway Officials prior to the road congress just held in Chicago, the resolution failed of endorsement by a tie vote, the old question of state's rights entering the case. The Southern States' representatives were not anxious to see an extension of Federal supervision over State road work. Nevertheless the resolution was taken up again and carried by the congress as a whole, the American Association of Highway Officials sitting as a part of the congress. Thereupon the state officials retired and in the future met by themselves.

The resolution which has such an interesting history reads as follows:

Whereas, The President of the United States in his recent message to the Congress, recognized the value of improved highways in the general transportation system of the nation and definitely recommended and urged their rapid development; and

Whereas, This work is necessary to give employment to our returning soldiers and also to furnish worthy projects on which unemployed labor can be engaged during the period of readjustment; and

Whereas, We recognize the necessity for a well defined and connected system of improved highways in order to expedite the distribution of large volumes of food stuffs now wasted on account of the lack of prompt and adequate highway transportation and to better serve the economic and military needs of the nation. Therefore, be it

Resolved, That a Federal Highways Commission be created to promote and guide this powerful economic development of both highways and highways traffic and establish a national highways system. Be it further

Resolved, That the present appropriations for Federal aid to the States be continued and increased and the States urged to undertake extensive highway construction so as to keep pace with the development of this country and its transportation needs, and that in carrying out the provisions of the present Federal Aid Act or any amendment thereto that the State highway departments shall co-operate with the Federal Highways Commission. Be it further

Resolved, That all governmental activities with respect to highways be administered by the Federal Highways Commission.

A Case of Oil and Water

Back of this split between the highway officials and the equipment and material men is probably the very excellent reason that the highway officials consider it a bad precedent for the equipment and material men to dictate a Federal Road Policy. The whole object of forming an American Association of Highway Officials was to be able to retire by themselves and discuss the merits of different types of pavement without the influences brought to bear by material men.

The Highway Industries Association is and can be a powerful influence on congressional legislation, but its influence depends very largely on the harmony of the interests involved and of these interests the American Association of Highway Officials is certainly the most potent one. They are the servants of the public and must be considered above selfish motives, which can hardly be said of any of the other groups composing the Highway Industries Association. With the jury in the case, which is the great public at large, their opinion certainly will be entitled to greater weight than all the rest of the congress put together.

Bright Outlook for 1919

Through a great mass of papers, discussions, addresses and academic lectures the plain fact showed through that every one is looking forward to the greatest road-building era ever, and that if material men will use common sense and work on constructive principles there will be business enough for all.

Will Not Dump Surplus on Market

WASHINGTON.—Secretary of War Baker has announced that the War Department would not "dump" upon the market the large surplus of building materials and other supplies which has accumulated since hostilities ended in France.

"The policy of the department," said Mr. Baker, "is not to disturb the market by dumping these supplies, but to hold them until we can determine just what use can be made of them, and later to dispose of any surplus gradually and in a manner likely to cause the least disturbance in the commercial markets."

William Butterworth, of Moline, Ill., president of the Illinois Manufacturers' Association, on his return from Atlantic City said: "The raw material and goods held by the government, it is expected, will not be disposed of without first consulting the interests of the industries which such sales would affect."

Stone and Sand Men Discuss Plans

Revolutionary and Evolutionary Constitution Interesting to All Producers of Mineral Aggregates Proposed by Gravel Committee—Chicago and Buffalo Convention Cities

Sand and Gravel Producers Tackle Problems

THE NATIONAL ASSOCIATION Sand and Gravel Producers has thrown wide open the gates to the whole industry.

All engaged in the business anywhere in the country will be invited to attend the next annual convention in Chicago January 28 and 29. It will be in effect a reorganization meeting whereby those heretofore not affiliated may come in and participate equally with others in the business of the convention and assist in the formulation of plans.

This action was decided upon by the Executive committee at Hotel La Salle, December 12, Chicago, because commercial conditions of this day demand that industry get together, now as never before, if the utmost advantage is to be taken of opportunities. If the perplexing problems affecting the industry are to be solved as they should be solved it requires unity of action and general support.

Directly in line with this action were other proposals quite evolutionary, one the submission of a revised constitution at the annual convention with the purposes of the association broadly and definitely stated, citing particularly the association object to work harmoniously not only with county, state and national governments but also with other organizations wherever their interests are common.

This opens the way for joint committees and joint actions between the sand and gravel producers and crushed stone and crushed slag producers.

It is proposed also in the new constitution that the annual assessment of members shall be on a tonnage basis with a minimum amount of $25. It is estimated that the assessment will not exceed two mills per ton, probably not over one mill.

A distinct advance in government of the association will be made in another provision which provides for advisory or regional representatives to be the point of contact between individual producers and districts and the Executive committee of the association.

The committee discussed the railroad and freight question at length, but admittedly certainly knew no more about the course to pursue than railroad officials who themselves are undecided. President Harry Donnelley was authorized to appoint a committee to investigate and study the railroad problem and to make its report at the annual meeting.

Chicago was selected as the meeting place because it is the center of a great producing region where the most members are located. The argument for holding it in another section of the country where the membership is smaller and where membership prospects might be right at hand, was held not good under the present condition of things. It was believed that the present membership should be provided with the place most accessible for the most members during reorganization. The most important thing at this stage is to get the membership out; distant places because of distance might discourage attendance. It is the belief however of the officers that the claims of other places should be considered in the future.

The proposed constitution will be mailed to all members and to all non-members with an invitation to join, to come to Chicago and to assist in the reorganization.

Open Meeting on Wednesday

The day previous, December 11, the Executive committee had held an open meeting to which all members who had come to the city to attend the Highway convention were invited. All the problems before the committee were laid before this assembly and informal discussion followed. The proposed constitution was also read by B. H. Atwood, chairman of the committee on revision.

The attendance of about twenty-five, nearly all from outside of the city gave proof of interest. The discussions which were animated displayed fine enthusiasm for a greater and better association and a determination to make the sand and gravel industry the power it should be.

The suggestion that the sand and gravel producers, crushed stone and crushed slag producers unite in one great effective association brought out two views. That there could be and should be unity of action along many lines was granted by all; the method was the point of dispute. While several stood for a great amalgamation others maintained that the same advantages would be attained by joint cooperative committees.

In the evening the Executive committee and members were guests at dinner given by the Chicago producers at the Sherman Hotel. Resolutions of condolence were adopted on the death of W. R. Webster of Mason City, Iowa, member of the Executive committee. Frank Renwick of Chicago was named by the president to fill the unexpired term.

Crushed Stone Men Have Informal Meeting

THE Chicago road congress, held under the auspices of the Highways Industries Association and the American Association of Highway Officials, was the occasion of bringing a number of crushed stone men together for an informal meeting. This meeting and an executive committee meeting of the National Crushed Stone Association were held to outline a policy for the activities of the association for the coming year.

There were present A. J. Blair, Milwaukee, Wis., President of the National Crushed Stone Association, A. P. Sandles, Columbus, Ohio, Secretary, John Rice, Easton, Penn., Vice-President, A. J. Sullivan, Chicago, Treasurer, James Savage, Buffalo, N. Y., L. H. Hawblitz, Toledo, Ohio, Thornton Dixon, Monroe, Mich., E. C. Dunbar, Detroit, Mich., A. Acton Hall, Piqua, Ohio, H. E. Bair, Toledo, Ohio, Robin Boyle and C. M. Doolittle, Toronto, Ont., J. D. Ohrt, Lannon, Wis., R. W. Scherer, Milwaukee, Wis., F. W. Katterjohn, Louisville, Ky., W. J. Sparks, Paducah, Ky., Fred Kanengeiser, Youngstown, Ohio, Allen Patterson, Lewisburg, Ohio, and J. J. Urschel, Toledo, Ohio.

It was voted to hold the next annual convention, February 11 and 12, at Buffalo, N. Y. A banquet will be held and prominent men will make addresses, but the greater part of the time of the convention will be devoted to round-table discussions of actual operating and business problems.

Subjects suggested for discussion include uniform cost-keeping, the open-price policy of association work, freight rates, operating details, Americanization work, safety devices, etc. There is every prospect of a big meeting and one so valuable for the exchange of operating ideas that no live quarry man can afford to miss it.

Notwithstanding a hard year for many Middle West quarrymen, the National Association is completing the first year of its existence in a sound financial condition. Its accomplishments have been of a pioneer nature; it has blazed the way to a future of great value to the quarry industry, it has put the quarry industry on the map. This could only have been done by the faithful service of its promoters and all have given freely of their time and effort.

A more complete announcement of the Buffalo convention will appear in the next issue of ROCK PRODUCTS.

What Is Wrong With the Sand and Gravel Industry?

E. Guy Sutton in Informal Talk Discusses It as a Financial Risk—Why It Should Have a Higher Commercial Rating—Sand as the "Key" Material—How Organization Has Helped Producers—Meeting the Future

E. GUY SUTTON, executive secretary of the National Association of Sand and Gravel Producers, addressed a gathering of members at an open session of the executive committee at Hotel La Salle, Chicago, Dec. 11, with informal but timely remarks of which the following are abstracts:

If the business sagacity of the United States were to be measured by the success of the sand and gravel producers this nation would not be recognized as a commercial power today.

By this I mean that the past of the industry for the most part has been characterized as a losing proposition.

This is not as it should be for the importance of the material produced warrants that the business shall have a higher rating in the industrial scale.

Sand the Key Material

Sand, for instance, may be considered as the "key" material in any building work irrespective of the variety of other material that may enter into the construction. It is essential also in connection with operation of railroads, the use of motors in mines, for molding and finishing of castings and the manufacture of glass. It compares favorably with other material for use as railroad ballast and can be employed for road building regardless of the class of construction specified.

Why Considered a Financial Hazard

Realizing the fact that the production and sale of sand and gravel is of vital importance to the building, manufacturing and transportation industries and thus contributes in the creation of permanent wealth, why is it that the business as a whole must be considered as a financial hazard? Some of the reasons are at once apparent:

1. The industry is comparatively young and from necessity has had to pass through a period of experimental development.

2. The seeming simplicity of production of sand and gravel has led inexperienced men to establish plants without giving due regard to the factors that must be considered in the selecting of suitable locations:

A. Deposit
   (a) General character—depth, quantity and quality.
   (b) Ratio of fines to coarse material.
   (c) Overburden—depth and character.

B. Transportation Facilities
   (a) Distance from main line.
   (b) Attitude of railroad company to enterprise.
   (c) Freight rates.

C. Markets
   (a) Distance from deposit.
   (b) Demand.
   (c) Competition.

D. Water Supply
   (a) Source and quantity.
   (b) Chemical qualities (boiler use).
   (c) Drainage for waste.

E. Fuel
   (a) Availability.
   (b) Quality.
   (c) Price including freight rate.

F. Labor
   (a) Class.
   (b) Wages.
   (c) Accessibility to plant location.

3. The development of the industry has been allowed to drift more or less at will without following any systematic plan or having a definite aim or goal.

4. Full advantage has not been taken of the natural adaptability of sand and gravel to various purposes and surely not of potential uses.

5. Until very recently destructive methods of competition have prevailed whereby the selling price has been less than the cost of production. Obviously such a practice if long followed, spells disaster and ruin.

Historical Periods of Industry

The history of the sand and gravel business may be divided into three periods:

1. Pre-War.—The period of infancy and experimentation during which time the chief asset accumulated was experience.

2. War.—The period wherein restrictions and priorities were the bane of existence but during which sacrifices were made willingly.

3. Post-War.—The period that is before us and which is plastic for our molding.

Co-operation Emphasized

The period of patient endeavor previous to the war has given to us a basis for a more systematic development for the future. The period has impressed upon us the need of co-operation more strongly than ever before.

Fortunately at the beginning of hostilities we had begun to realize the necessity of organization and had several state associations and the semblance of a national association. If we had not been thus fortified we would not be here to tell the story. As a result of our united activities we have had a fair supply of cars, fuel and labor and our prices have been more consistent with the cost of production than previously.

Others Suffered More

While we have had to endure the evil effects of this war, I believe we have suffered the least of all industries which were not convertible to direct war purposes.

Though peace has not been declared we can be assured that the conflict is over. We are entering what is popularly called the Reconstruction Period but which to us in America might be more properly designated as the Period of Readjustment. The questions which will be presented for discussion and decision as peace issues will be just as hazardous to business as was the case when all the forces of industry, including capital, labor and transportation were being mobilized for war. As has been repeatedly said, it is easier to scramble eggs than to unscramble them. Emergency acts which were justified by the exigencies of war have created and established policies and conditions which will likely cause confusion for some time to come.

Railroad Question

The disposition of the railroads and the effect it will have upon freight rates, car supply and general traffic practice is a question which is of special concern to sand and gravel producers. No one can predict what the decision of congress will be but it is safe to conclude that we will not return to the methods of handling transportation matters which prevailed previous to the war.

Labor Problem

Another problem is labor. It does not have to do primarily with the supply of labor, nor is it a political question, but rather it deals with the social aspect of the matter.

Mr. Sutton then outlined the five points laid down by John D. Rockefeller, Jr., at Atlantic City and Chas. M. Schwab's like sentiments.

Business Prospects Excellent

The prospects for an unprecedented building program is very encouraging. Both public and private improvements which have been deferred for the past four years can naturally be expected to be resumed. The president in his recent address to congress gave unqualified approval to such procedure.

In addition to extensive road building, we may expect railroad improvement and maintenance work, including ballasting, to be taken up as soon as laborers are released from war industries, the scarcity of labor being the chief reason for not using the appropriations already made.

Unfavorable Aspects

While the prospects are bright for a prosperous season next year, it would be unwise not to take notice of some unfavorable aspects:

1. Freight rates are unreasonably high, and glaring irregularities exist which may hinder the development of construction work.
2. The car supply is uncertain and at best will be inadequate.
3. With immigration practically stopped and emigration rapidly increasing a scarcity of labor will exist unless demobilization is effected at a greater speed than is now anticipated.
4. The Capital Issues Committee will remain in existence six months after peace is formally proclaimed. While this agency has given assurance of a liberal attitude with reference to public improvement work, its views may be modified by the demands of the next Liberty Loan.

The tendency of the times is toward centralization in all branches of industry and governmental supervision of commercial activities. The war has taught among other things that man does not live by bread alone nor can he conduct his business affairs irrespective of the endeavors of others. The desire for co-operation is universal; good faith has superseded bad faith.

The Question Before You

Without discussing the matter further I am going to lay the question squarely before you. Are you, as sand and gravel producers, going to make our national association a real live, working, result-getting organization equipped to help solve the perplexing problems of readjustment, to take advantage of the period of prosperity that lies ahead, and to develop our business along progressive lines with a view of giving service to our fellow men and at the same time assist in directing the firms engaged in this great industry toward the success they deserve?

Shall we drift with the tide and forfeit our right to take advantage of the opportunities which the future holds out to us?

Portland Cement Association Meets in New York

ONE of the features of this year's annual New York meeting of the Portland Cement Association, Dec. 9, 10, 11 and 12, was a "road dinner." The speakers were George C. Diehl, president of the American Automobile Association; David M. Kirke, president of the Portland Cement Company of Pittsburg; H. C. Batchelder, chairman of the American Automobile Association, and H. E. Breed, First Deputy State Highway Commissioner of New York. Mr. Diehl, whose subject was "The Automobile Interests in Connection with the Cement Industry," said that highway improvement was most important in the development of this country that it might take its place with the other nations. Referring to the State highway across New York, he said a federal highway system was necessary to the development of State highways and that he would eliminate township highways so far as they interfered with construction of federal roads. "Now is the time," he declared, "to get the federal government committed to appropriations for highways."

The balance of the meeting was devoted to discussion of business and manufacturing problems. The greatest optimism prevailed as to the future of the industry.

Government to Aid Potash Production

WASHINGTON—The problem of increasing potash production in the United States so that the American farmer may be permanently freed from the grip of Germany's monopoly on the world's supply of fertilizer materials was turned over to the Interior Department Nov. 28 by the War Industries Board.

President Wilson directed that the Interior Department take over this work from the chemicals division of the board as a part of the program of definitely continuing necessary work started by agencies created during the war.

Rock Quarrying For Cement Manufacture

UNDER THE ABOVE TITLE the U. S. Bureau of Mines has issued Bulletin 160. The author, Oliver Bowles, has visited 64 of the largest cement plants in the United States, from Oklahoma eastward, and the results of his investigations comprise the major part of this bulletin.

Blasting methods, costs, etc., are treated in great detail. This part of the bulletin will prove of much value to all quarry operators who get out material for cement, lime or commercial crushed stone. The bulletin presents many examples of blasting results and their actual conditions.

Methods of transportation within quarries, and from quarries to crushing plants, are discussed in detail, and many improvements are suggested. The chief features reflecting inefficiency noted are: Needless complication of trackage, especially in quarries with multiple benches; haulage on excessively heavy grades; the combination of too many different systems of transportation in a single quarry, and excessive rehandling of rock.

No attempt is made to discuss problems connected with manufacturing processes except insofar as they are related to quarry methods. The method of mixing the raw materials in order to obtain the proper proportions of the constituents used has, in many instances, a marked effect on the quarry method, and consequently this particular phase of cement manufacture is discussed at considerable length.

Many cost figures, obtained through the kindness of quarry operators, are given, with the principal controlling conditions, to aid quarrymen in judging the efficiency of the methods they use as compared with results obtained by others.

In the type of quarries considered in this publication, quarrymen are subject to many dangers. The discussion of safety problems is not confined to one separate chapter, but whenever machines or methods are discussed the dangers involved are considered and the best means of minimizing such dangers are pointed out.

Copies of this bulletin may be obtained free of charge by addressing the Director of the Bureau of Mines, Washington, D. C.

Building Industries Form Permanent Association

MEETING at Atlantic City, December 13 and 14, following the meeting of the war service committees, the National Federation of the Construction Industries held an organization meeting. A new constitution was adopted which divides membership into two classes—national associations and regional associations. The membership dues are respectively $300 and $100 per annum.

The stated object of the organization is "for the purpose of extending construction and improving conditions in the combined industry. It is intended to co-ordinate the units of the industry in its manufacturing, distributing, professional and constructive activities, thereby increasing its efficiency and extending its usefulness."

All States Cooperate in Federal Aid Road Act

WASHINGTON, D. C.—Legislative assent, required by the Federal Aid Road Act, has now been given by the legislatures of all States except Alabama. The Alabama legislature meets only quadrennially, and its next regular session will convene in January, 1919, at which time it is expected the necessary legislative assent will be given, according to the annual report of the Bureau of Public Roads of the United States Department of Agriculture. The Governor of Alabama has assented on behalf of the State, as authorized by the act, so that co-operation by the State has not been affected adversely.

First Concrete Boat for U. S. Fleet Launched

THE reinforced concrete steamship "Atlantus," 3,500 tons carrying capacity, was successfully launched at 9 a. m., December 3, at the yards of the Liberty Shipbuilding Co., Brunswick, Ga.

The "Atlantus" is the first of the concrete ships contracted for by the U. S. Shipping Board Emergency Fleet Corporation, to be finished. Sister concrete ships as well as a number of concrete ships of 7,500 tons' capacity are being built in the yards of the Liberty Shipbuilding Co., and in four other yards.

Organize Southern State Associatoins

Gravel Men in Georgia—Two New Crushed Stone Associations

PRODUCERS of mineral aggregates in the Southern States have made definite decisions and taken definite action in the past few weeks for the good of their respective industries by organizing. These are the crushed stone producers of Kentucky, Georgia, and the Carolinas and the sand and gravel producers of Georgia.

To the war largely belongs the credit of these organizations, for they appear to be the outcome of the organization of the War Service Committee and of the general lessons on co-operation that the war taught. At both meetings there were all the indications of enthusiasm and earnestness which speak well for the future of the respective associations.

Georgia Sand and Gravel Producers' Association

ATLANTA, Ga.—The Georgia Sand & Gravel Producers' Association was organized Nov. 20 at the Hotel Piedmont, here. Those present represented between 80 and 90 per cent of the tonnage shipped by the producers of the state which indicated the healthy condition of the youngster at its birth.

Arthur P. Burke, of the Atlanta Sand & Supply Co., Atlanta, was elected president and R. A. Boston, also of Atlanta, secretary.

It was an enthusiastic meeting. Says the secretary's report:

"Never in the history of the sand business have the producers evidenced such a spirit of co-operation. It was the opinion of every one present that the conditions affecting our industry make this the most opportune time for the forming of such an association. It was thoroughly agreed that the only permanent benefit to be gained by the individual, must come through a general up-building of the industry, it being impossible for one producer to build up a prosperous business unless he did so by operating under conditions that would give his competitor the same opportunity."

Discussions on several subjects such as the handling of local shipments and the selling agency plan were discussed generally, but the whole matter was left to the executive committee. The constitution and by-laws were read and adopted at the evening session. Among those who took most active part in the organization and discussions were: Messrs. Smiley, Taylor, and Nix. The latter has been the most active in getting the producers together and boosting for organization.

Mr. Nix was the first man who ever attempted an organization in Georgia, having called a meeting about a year ago.

Arthur P. Burke

ARTHUR P. BURKE, president of the recently organized Georgia Sand & Gravel Producers' Association and member from the eighth district of the War Service Committee on Mineral Aggregates, is, in the first place, a talented musician and a member of an Atlanta orchestra. This fact may not give reason for his prominence in such a material thing like mineral aggregates, but his other experiences do help in that respect. He was at one time engaged in the furniture trade, and later became a successful manager in the insurance business.

It was in 1907 that Mr. Burke entered into the gravel business. At that time he became associated with the Atlanta Sand & Supply Co., which was a partnership composed of Byron Souders and F. B. Jamison. A year later Mr. Burke organized the Georgia Sand Co., of which he owned one-half stock and became Secretary and General Manager. In 1910 he re-organized the Atlanta Sand & Supply Co. It was composed of four sand dealers. He was made President and General Manager.

He was the first to use a sand washing equipment in Georgia, and made his company one of the leading enterprises in his section of the country. The company now handles a large line of building materials, including crushed stone, with which he is familiar.

Kentucky Crushed Stone Association

LOUISVILLE, Ky.—Seventeen crushing plants of Kentucky were represented at a meeting in the Seelbach hotel, here, Nov. 27, at which time a temporary organization to be known as the Kentucky Crushed Stone Association was effected.

R. Brink Tyler, head of the Tyler Building Supply Co., the R. B. Tyler Stone Co., and the Banner Coal Co., was selected as chairman pro tem.

The fundamental purposes of the organization are to bring the trade together in a spirit of goodfellowship as generally expressed in the term co-operation. Among the plans are the development and maintenance of markets, better methods of quarrying, interchange of information on all matters of interest and advantage to the industry, such as freight rates, coal supply, labor, selling methods and business management.

One subject extensively discussed was that of agricultural lime, which most all present agreed is a growing field. W. J. Sparks, who owns four plants and is a partner in a fifth, made a strong plea for uniformity in sizes. F. W. Katterjohn, operator of three plants, endorsed the idea of uniformity suggested.

In discussing business for the past few months it was shown that demand had been rather dull. However, the members were very optimistic concerning 1919 operations, feeling that there would be a large volume of road work and general construction, street building, municipal building, and private construction, representing work that had been held up during the war.

The organization will be completed at a meeting scheduled for December 18 at the Seelbach hotel when a larger attendance is expected. During the interim every effort will be made to invite every eligible producer in the state. A committee composed of F. W. Katterjohn, W. J. Sparks, and R. B. Tyler was named to attend the convention at Chicago, December 11 and 12.

Southeastern Crushed Stone Association

THE ORGANIZATION meeting of the Southeastern Crushed Stone Association was held in Atlanta, Oct. 17. It was originally planned to include in the new association all crushed stone producers in Mineral Aggregates District No. 8, but invitations were subsequently extended to producers in Tennessee and North Carolina.

Eight charter members have joined the new organization, seven in Georgia and one in South Carolina. The president of the new association is J. L. Backus, of the Ladd Lime & Stone Co., Cartersville, Ga., and the secretary-treasurer is F. T. Mason, of the Pine Mountain Granite Co., Central building, Atlanta, Ga.

Meetings already held give reason to expect good and lasting results from this new atmosphere of co-operation which is permeating all ranks of industry.

Eastern Crushed Stone Association Applies for Freight Rate Reductions

Proposes to Local District Traffic Committee Rates Based on Decision in the Birdsboro Stone Co. Case

ACTION looking toward a reduction of freight rates on crushed stone, which may prove of great importance to the industry, was taken December 11 in the filing of a petition by the Eastern Crushed Stone Producers' Association with J. L. Eysmans, chairman of the Philadelphia District Freight Traffic Committee. The Interstate Commerce Commission is contemplating enforcing its order of last April in the case of the Birdsboro Stone Co. vs. the Pennsylvania R. R. The history of this case was published in ROCK PRODUCTS of September 11, 1918.

The petition of the Eastern Crushed Stone Producers' Association reads as follows:

"Referring to the proposed reduction of freight rates on crushed stone amounting to over 80 cents per ton, we, the undersigned producers of crushed stone in this territory, wish to make the following proposal:

"It is understood that the proposed freight rates on crushed stone on the Pennsylvania Railroad are based on the decision of the Interstate Commerce Commission in the case of the Birdsboro Stone Co. vs. Pennsylvania Railroad. In view of the fact that this was an interstate question, and that about fifty miles was the distance from the shipping point to the state line, the question of rates for distances under fifty miles was not involved.

Rates Proposed

"An analysis of the decision of the I. C. C. reflects that a base rate of 20 cents per ton was used plus 6 cents per ton for each block of ten miles to short haul points, and same arbitrarily decreased for the longer hauls, and assuming that its decision is fair to all parties interested for the distances mentioned it is fair to assume that the same basic principle is applicable to distances for less than 50 miles, for which no provision was made by the I. C. C. This would make the following schedule:

		Plus 20c per ton increase June 25.	On basis of 25% increase.
0 to 10 miles	$0.26	$0.46	$0.325
11 to 20 miles	.32	.52	.40
21 to 30 miles	.38	.58	.475
31 to 40 miles	.44	.64	.55
41 to 50 miles	.50	.70	.625
51 to 60 miles	.56	.76	.70
61 to 70 miles	.62	.82	.775
71 to 80 miles	.68	.88	.85
81 to 90 miles	.74	.94	.925
91 to 100 miles	.80	1.00	1.00

"We respectfully ask that either of these proposed rates, but preferably that on which the increase is 25%, be made effective. We have already touched upon the undoubted equity of these rates by reason of the I. C. C.'s decision. It is probably unnecessary to offer much supplemental argument. However this might be said:

Argument

"Crushed stone is almost the cheapest commodity that is transported. Ordinarily the freight rate is equal to or greater than the value of the material. The profit on crushed stone will not, on the average exceed 10 cents a ton. It is therefore impossible to absorb any portion of the freight rate out of such profit. The radius of distribution is short. As a general proposition, 75% of the tonnage is not shipped over 70 miles, and a very small percentage is shipped in excess of 100 miles. There are conditions and circumstances prevailing at certain points which occasionally may vary these figures, but the statement is true as a broad proposition. By reason of the exceedingly small profit per ton it is impossible, and in principle unfair, that a cheap commodity involving minimum risk and expense in handling should bear a proportion of the overhead expenses of railroad operations equal to commodities which earn profits of three to five dollars a ton, i. e. a difference of freight rate of 5 cents, 10 cents or 20 cents per ton is substantially immaterial to a commodity like pig iron, but it is absolutely vital to crushed stone.

"The railroad carrying the freight must be maintained by use of ballast, which comprises about 50% of the crushed stone output, and if the rate is so high as to destroy the market for the smaller sizes made in crushing stone for ballast, then the railroads must pay the increased cost of production for the ballast, because of a quantity of crushed stone thrown away as useless or unmarketable by reason of the excessive freight rate.

High Rates Prohibit Production

"When the freight rate on crushed stone rises above 60 cents or 70 cents there must be some unusual circumstances which warrant the purchase of the material, such as the impossibility of quarrying in the neighborhood of the market, as in the City of Philadelphia, or where a particular kind of material is wanted, or where there is not sufficient demand for crushed stone in a particular place to warrant the operation of a local crushing plant. Such places will have to pay the ruling cost of the product if they cannot use a substitute, except in the case where the material exists but the crushing plant does not, and then a high freight rate simply induces the building of such local plants, to the disadvantage of the railroad in the matter of freight revenue and to the disadvantage of the commercial plants already established and to the disadvantage of the local community because of the higher cost of production of the small plant.

"In addition to the above, the matter of differential, by reason of geographical location, is a perfectly natural and fair basis for rates. It does not cost the railroad company as much to haul stone 20 miles as it does 50 miles, therefore there is no good or fair reason why there should not be a variation in the rates under 50 miles. Operations have been established where the cost of operation may be higher than some other location, but warranted by reason of the fair differential in freight rates. To wipe out this differential is to destroy a property right which is unwarranted and unjust.

Recent Increases Show Discrimination

"Any analysis of crushed stone freight rates of a year ago as compared with the present, or of the proposed rates unless corrected for distances under 50 miles, shows a totally unfair discrimination, however unintentional. At the time of the 15 per cent increase in freight rates low short-haul rates were increased 25 per cent and frequently 50 per cent. When the new increase went into effect, the same rates were again increased from 30 per cent to 40 per cent in many instances. In other words, in the last two increases aggregating jointly 43.75 per cent the rates on crushed stone generally, under an 80 cent rate, were increased on an average of nearly 60 per cent, notwithstanding that a cheap commodity should not carry the same proportion of overhead, i. e., should not carry the same percentage of increase that a higher-priced commodity, even in its own class, should bear.

"We also direct your attention to the fact that sand, and frequently slag and gravel, materials competitive with stone, in many instances are carried for lower rates, whereas they are substantially in the same class and of approximately the same value. Doubtless the argument in behalf of these commodities is that they carry all

the freight they can stand. We ask that crushed stone be considered in the same light, in that it should have as low a rate as the railroad can economically stand in the interest of its own maintenance (from the standpoint of ballast) in the interest of increasing its revenue by an increased tonnage, even though at slightly lower rates per ton, and in the interest of the public, as a large proportion of our output is used in the construction and maintenance of roads and pavements.

"We trust that the question of rates will be decided so as to render them available for estimating on work now under consideration for prosecution next spring, and we are particularly desirous that whatever change in rates is made will be done with every consideration for the interests of our business, and on such basis that when ultimately reduced they will come back to a basis on which our business can thrive."

(Signed)
THE GENERAL CRUSHED STONE CO.,
By John Rice, President.
KEYSTONE LIME & STONE CO.,
By J. C. Budding, President.
LENNI QUARRY CO.,
By Edw. M. Kalehoff, Secretary.
LAMBERTVILLE STONE QUARRY CO.,
By W. H. Ireland.
THE JOHN T. DYER QUARRY CO.,
By F. T. Gucker, Secretary.
WALTER DERR.

Eastern Stone Association Takes Revolutionary Step

THE Eastern Crushed Stone Association, which has always been one of the most progressive in the country, is contemplating taking a step which will be almost revolutionary so far as crushed stone associations are concerned.

For some time past this association has worked under an open price policy—holding monthly meetings at which all contracts and quotations for the previous month made by all the members are laid on the table for the inspection of all. This is identically the same method followed in all merchandise sales. The seller tags his commodity with prices which are the common property of the trade.

To increase efficiency of operation and lead to further economies the association now proposes to exchange cost data in the same manner. Already the six essentials of a uniform cost-accounting system have been agreed upon.

Ultimately it is intended to furnish these cost data to state highway officials and other interested purchasers, to justify prices and thus take the public into confidence. This is in line with the most advanced ideas of doing business as expressed by prominent business leaders at the recent Atlantic City convention of the War Service Committees; and crushed stone men generally are to be congratulated that they are among the very first to act.

Mineral Aggregates Committee Gets Statement from Capital Issues Committee

WHILE OTHERS were discussing the possible policy of the Capital Issues Committee in regard to proposed bond issues for road improvement work, the live-wire members of the Committee on Mineral Aggregates, meeting at Atlantic City, December 3, voted to appoint a committee to find out just what that policy was going to be.

This committee was composed of the following members: James G. Shaw, general manager of the Upper Hudson Stone Co., New York City, chairman; A. J. Blair, general manager, Laketone Stone Co., Milwaukee, Wis.; George V. Miller, President, Granite Sand and Gravel Co., Indianapolis, Ind.; A. P. Sandles, Secretary, National Crushed Stone Association, Columbus, Ohio; H. J. Love, Secretary, National Slag Association, Cleveland, Ohio; E. G. Sutton, Secretary of the War Service Committee on Mineral Aggregates.

POLICY OF CAPITAL ISSUES COMMITTEE TOWARD PUBLIC WORKS

IT WAS ORDERED that public announcement be made to the effect that, where material and labor are available, bond issues for improvement of highways, for building schools, hospitals, water, sewage, drainage and irrigation systems, and for improvement of fire and police protection will receive favorable consideration when economic importance is shown to exist, and that the committee will likewise give favorable consideration to industrial and public utility issues where the improvements contemplated are compatible with readjustment to a peace basis.

An appointment was made by this committee with the Capital Issues Committee at Washington, December 13. At that meeting A. P. Sandles presented the case on behalf of the producers of mineral aggregates and the accompanying statement was authorized by the Capital Issues Committee.

The matter of the policy of the Capital Issues Committee is very important because this committee is the only restraint upon an unlimited public works program. The fear was expressed, at the Atlantic City meeting, that bond issues for road improvement work next year might be so delayed as to be offered at about the same time as the Fifth Liberty Loan campaign and consequently the Capital Issues Committee would be in a position to dish the whole prospects of a big season's work.

Lime in Building and in the Industries

ATTENTION has been called to the statement in ROCK PRODUCTS of Dec. 4, that the tonnage of lime used in the industries exceeded lime used in building by 200,000 tons in 1917. Under building lime was not included an item of 471,244 tons sold through dealers, a large part of which undoubtedly was used for building. In any event the use of lime in building must equal 50 per cent of the total output.

Mineral Aggregates Committee Favors Unity of Interests

ELEVEN of the fifteen members of the War Service Committee on Mineral Aggregates met in Atlantic City, Dec. 3, and voted to continue the good work already started, which it is hoped will eventually bring the three national associations represented into close co-operation, or even into one national association.

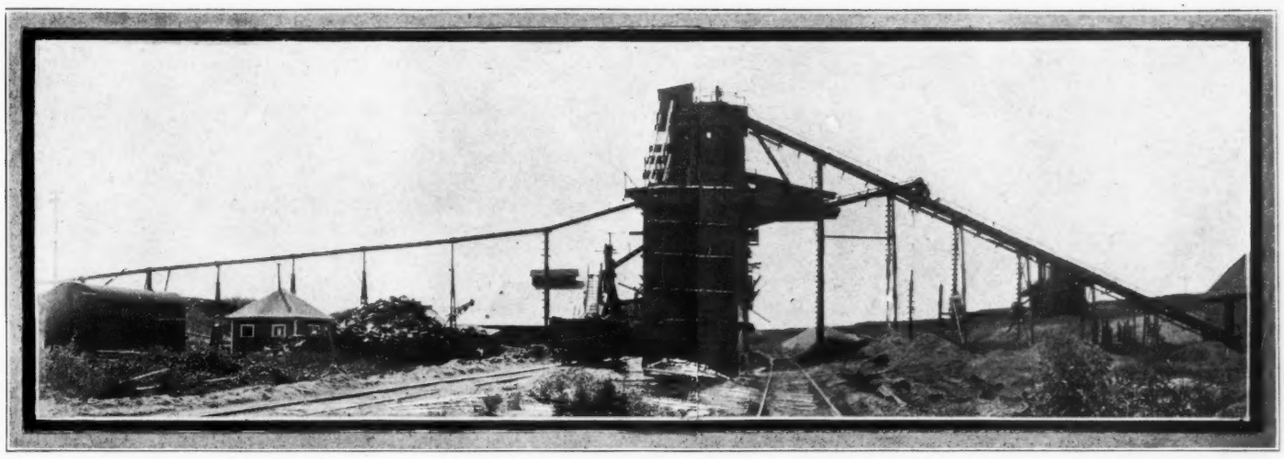
The three associations now grouped under mineral aggregates are the National Association of Sand and Gravel Producers, the National Crushed Stone Association and the National Slag Association.

Approve Highway Resolution

James G. Shaw, chairman of the Committee on Mineral Aggregates, presided. The resolution adopted by the Highway Industries Association earlier in the day, calling for a National Highway Commission with appropriate federal appropriations was unanimously approved.

Henry G. Shirley, Secretary of the Highway Industries Association, explained the meaning of the resolution and gave the rosiest picture of the immediate future of highway construction.

The members of the committee present were: James G. Shaw, general manager of the Upper Hudson Stone Co., New York City, chairman; A. J. Blair, general manager, Lakeshore Stone Co., Milwaukee, Wis.; George V. Miller, president, Granite Sand and Gravel Co., Indianapolis, Ind.; A. P. Sandles, secretary, National Crushed Stone Association, Columbus, Ohio, H. J. Love, Secretary National Slag Association, Cleveland, Ohio; E. G. Sutton, secretary of the War Service Committee on Mineral Aggregates; B. D. Pierce, Jr., president, Connecticut Quarries Co., Bridgeport, Conn.; George D. Van Sciver, president, the De Frain Sand Co., Philadelphia, Pa.; Joseph J. Hock, general manager, Arundel Sand and Gravel Co., Baltimore, Md.; W. F. Shaffner, North Carolina Granite Co., Winston-Salem, N. C.; W. S. Holmes, Chickamaugua Quarry and Construction Co., Chattanooga, Tenn.; A. P. Burke, Atlanta Sand and Supply Co., Atlanta, Ga.; L. H. Hawblitz, France Stone Co., Toledo, Ohio; John Prince, Prince-Johnson Limestone Co., and the Stewart-Peck Sand Co., Kansas City, Mo.



Atwood-Davis plant at Beloit—At right, crusher house, part way up main belt structure, winter screen and crusher; on balcony disg crusher with belt delivery to main belt; machine shop at left of washery; loading tracks on both sides of bins

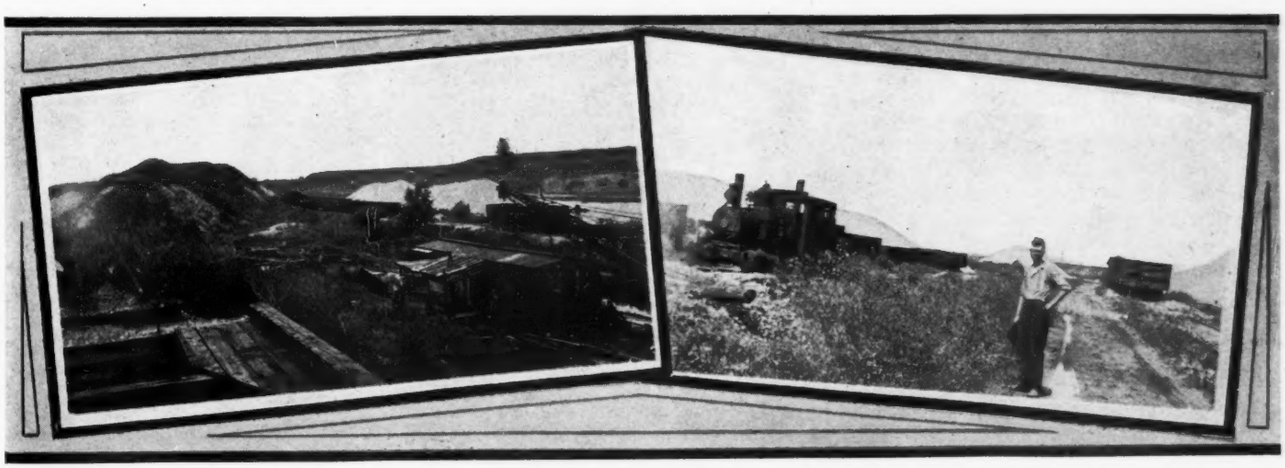
Efficiently Planned Sand and Gravel Pit for All-Year Operation

Atwood-Davis Company Adopts Several Unique Appliances and Ideas and Is Equipped for Summer and Winter Business—Stripping Methods Extraordinarily Economical

NUMEROUS features stand out conspicuously at the Atwood-Davis Sand Co. pit in Illinois about one mile south of Beloit, Wis. The company seems to have adopted all the standard class of machines for various purposes that could be used advantageously on the premises. To these has been added at least one highly successful device of the company's own development. After an inspection of the plant the conclusion is forced upon one that the company is adequately equipped with machinery for every emergency summer and winter.

The plant was laid out evidently with definiteness of plan. The whole operation presents original characteristics and elements that tend to increase efficiency and to give the best results the year around. It is a new plant finished last spring following the dismantling of the old.

On entering the first impression one receives is that of topographical expanse; the next the extent of the ground storage actual and possible; then the multiplicity of tracks. As one looks from the top of the washery all these impressions are reemphasized. The tracks extend in three directions; off to the west, beyond the Chicago & Northwestern railroad bridge, is the shovel; still farther, again as far, is the stripping outfit, all connected by railroad tracks. Northward toward Beloit, are several tracks for hundreds of yards and big storage piles of sand and gravel. To the south are more tracks and storage



Looking south from top of washery; at left, dump; at center and right, storage piles; picture at right, view to north with storage piles and storage tracks

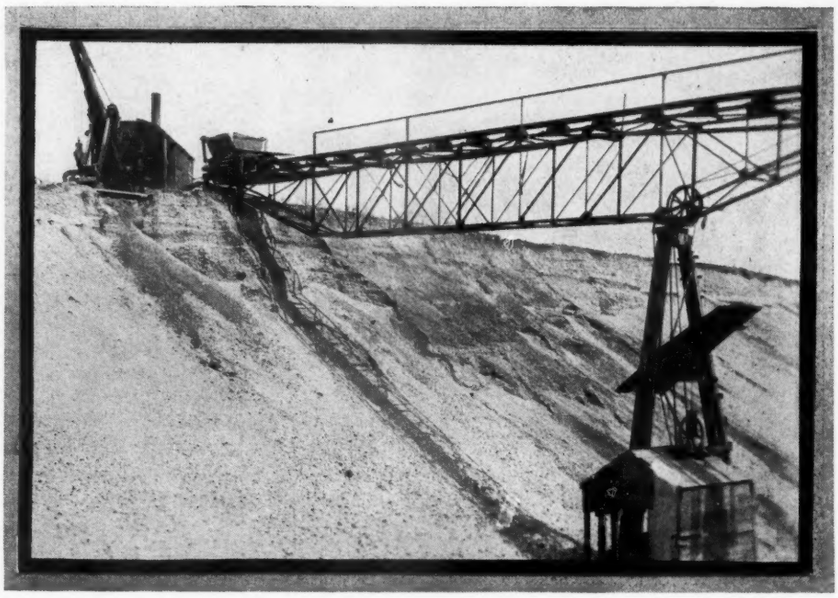
piles for a considerable distance.

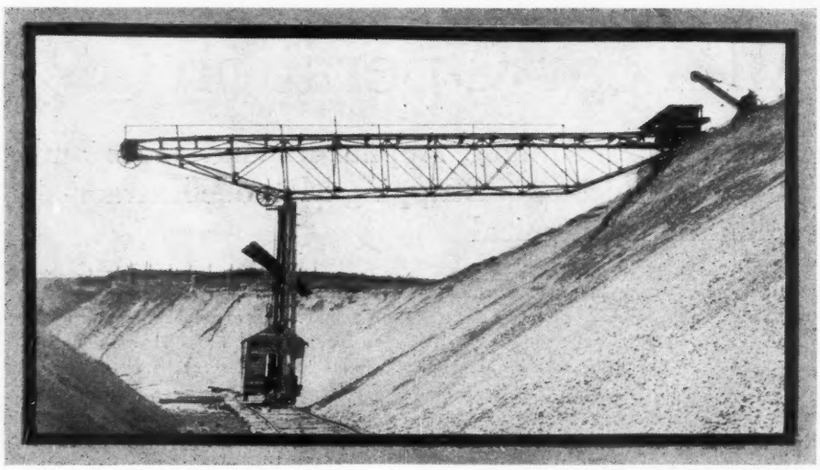
Unique Stripping Equipment

The stripping equipment will perhaps appeal to many producers as the most interesting department of the Atwood-Davis enterprise. It is an original conception of G. B. Harker, the superintendent. He has built a combination portable hopper and belt conveyor mounted on a steel frame structure, one end supported in the pit by a vertical "A" frame built on a truck, and the other end (the hopper end) resting on the top of the bank.

Resembles a Bridge

The steel frame resembles a span of a bridge. It is 80 feet long, 4 feet wide and 5 feet high, and extends from the bank over the pit tracks to the dumping ground. The truck supporting the discharging end of the conveyor and frame also carries a 5 H. P. gas engine which supplies power for the belt. This engine is partly enclosed, has ample power for driving conveyor belt and pumping water to the digging shovel on the bank. The water is drawn from a well point driven two or three feet into the bottom of the pit. This short depth is sufficient because bank excavation is carried down to water level.





Above—Stripping equipment showing shovel on bank, hopper, conveyor and engine house in pit

At left—Another view, showing discharging end of conveyor of stripping outfit

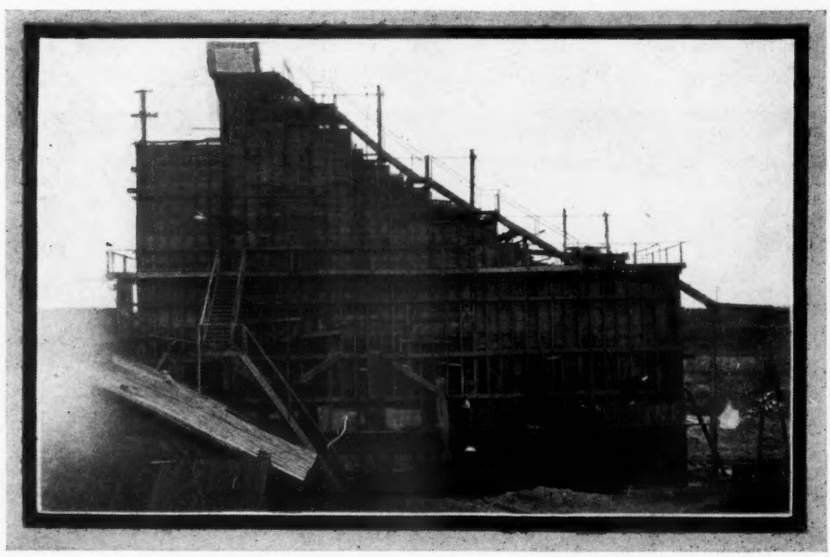
Below—View of washery and bins; cars being loaded. At left is machine shop

Operation of Equipment

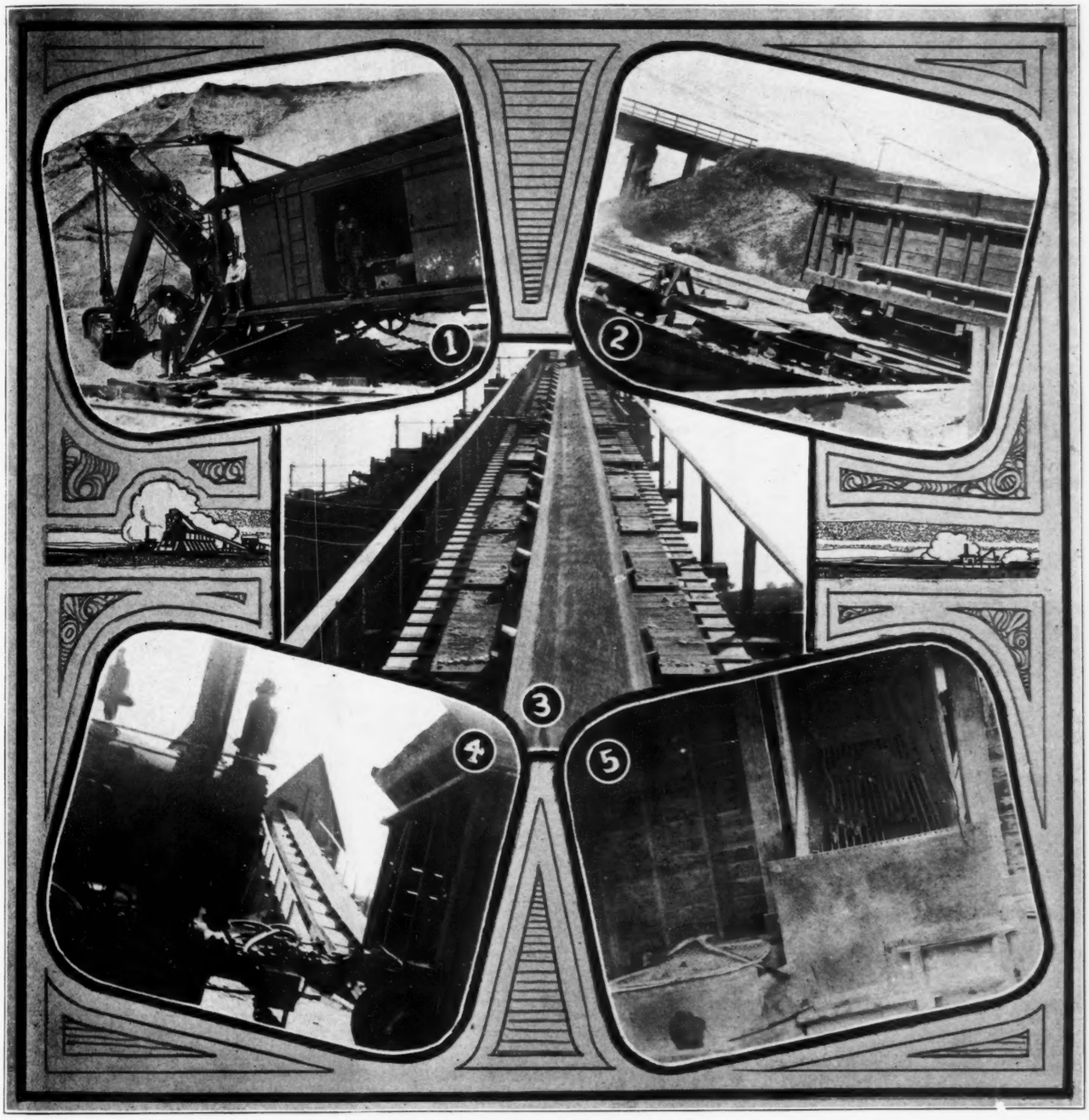
The stripping is done by a revolving shovel with a ¾ cu. yd. dipper. After the hopper has received the stripping the contents are conveyed by the belt to the dump. The hopper is large enough and the belt fast enough to care for all that the shovel can raise. Working continuously, stopping only for move-ups and the usual delays, the outfit will dispose of 400 cu. yds. in a day.

Truck on Wheels

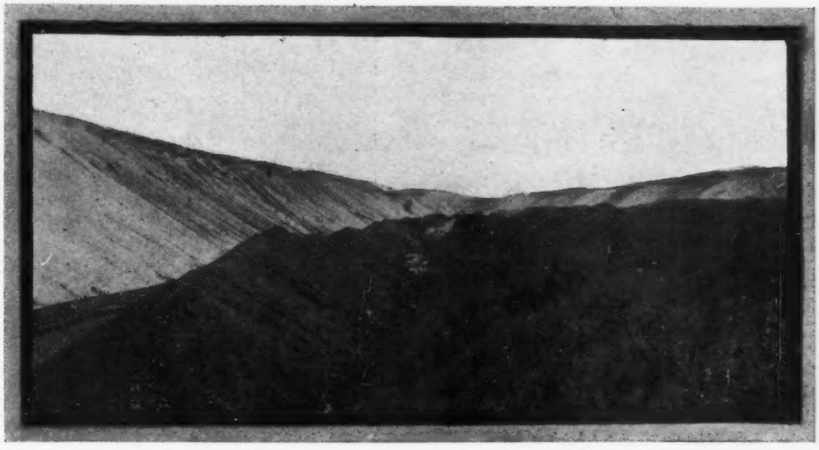
As the truck is on wheels resting on the pit tracks, moving the equipment is not difficult.



Dumping the overburden into the pit from which the material had been removed of course is an old idea of economical disposal, but the machinery used for its handling is far ahead of anything heretofore adopted by producers generally.



1—Steam shovel with 3 yd. bucket; 2—Hopper car set over belt which conveys material to crushers. 3—Main belt; 4—Glimpse of locomotive, hopper car, field belt and crusher house; 5—Glizzly and one of two gyratory crushers at left; 6—View of dumped stripping, dark spot in bank the big shovel, faintly in distance the plant

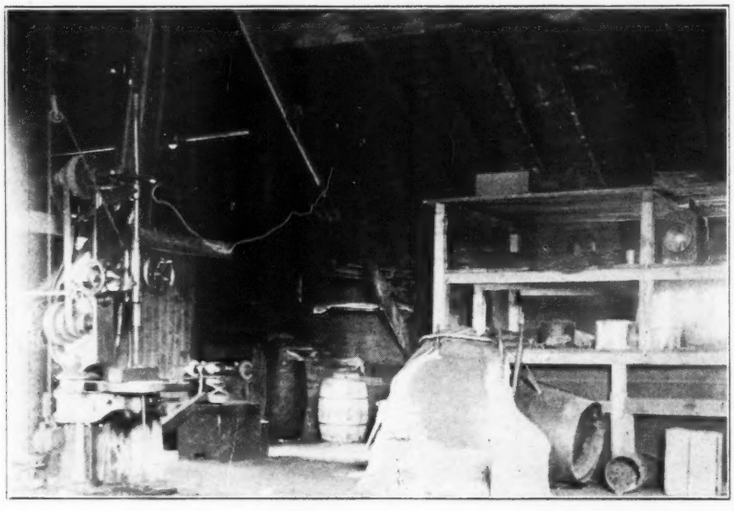


Great Economy Effected

The claims of economy for this operation may appear incredible but A. S. Sorensen, secretary of the company asserts that the first year's operation, 1917, cost so much less than the old method that the year's saving (excluding the shovel) more than paid for the installation of the hopper, steel frame, conveyor belt, gas engine, etc. The shovel had been used under the old method of stripping by loading wagons and dinky cars. Stripping by this method has proven a saving of better than 50% over any in the past.

The deposit runs 45 per cent sand and 55 per cent gravel with little foreign matter. Its depth is from 35 to 45 ft. A model 60 steam shovel with a three-yard bucket maintains a daily (10 hr.) production of from 45 to 55 cars. This shovel requiring five men, engineer, fireman, craneman and two in the bank, therefore has ample speed as well as capacity to dig all the material the plant will handle. This statement allows for the usual delays and for idle time.

From the pit bank the loaded hopper cars are hauled by a locomotive to the crusher house. The cars are of 30 cu. yd. capacity and the material is fed from trap doors in bottom of the cars onto a belt conveyor below the tracks. There are two tracks over the conveyor, permitting the loading of one car while another is being loaded in the pit and brought up by the locomotive.



Above—View to west from top of washery, winter screen and crusher under main belt, crusher house, field belt, railroad bridge, faint smoke in distance from the steam shovel

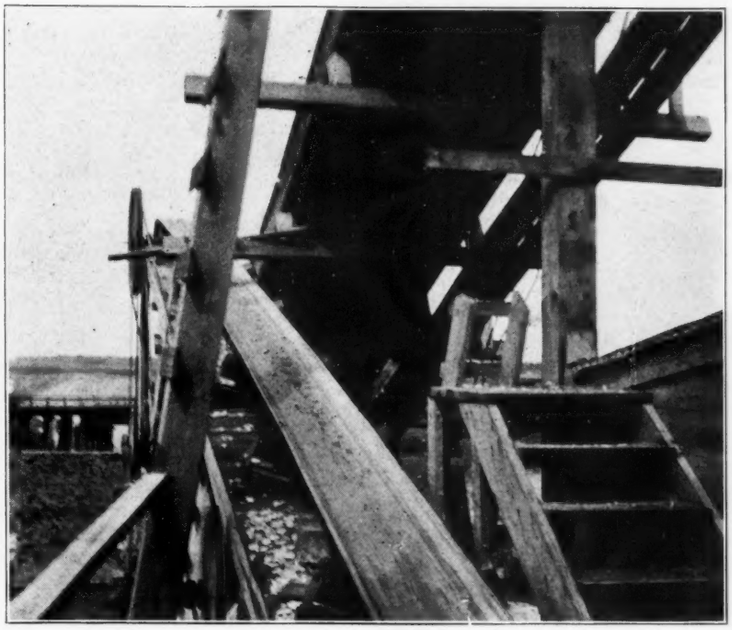
At left—Interior of machine shop

Below—The locomotive crane, "the handy man" used for many purposes around pit, summer and winter

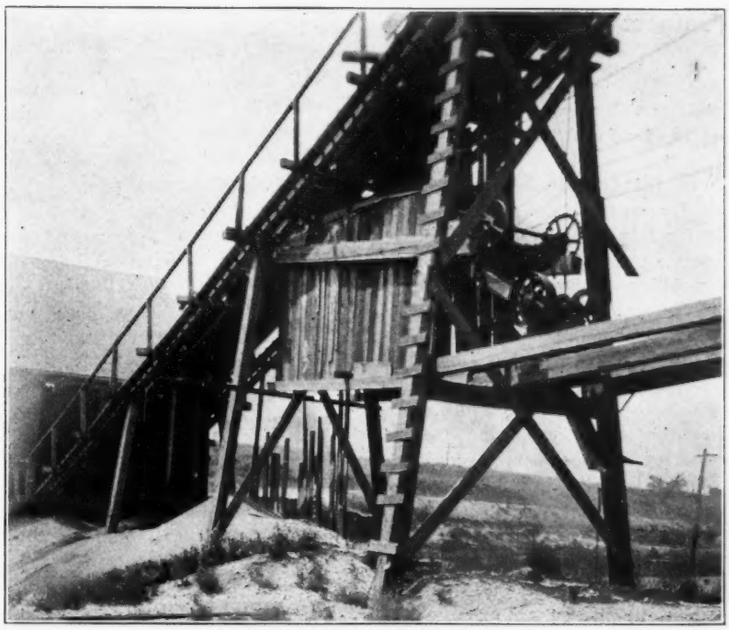
Crusher House

The material is carried by the first or field conveyor to the top of the crusher house. This belt is 238 ft. long with the pulleys 112 ft. c. to c. Material passes over the grizzly in the crusher house and is divided into two streams that feed to two No. 4 gyratory crushers, one on each side of and below the grizzly, and is rejected to main belt.

The main belt conveys all the material 180 ft. to a height of 65 ft. to the wash-



Short belt conveying re-crushed material from disc crusher on balcony to main belt



Close-up of winter crushing and screening department, car tracks below

ery, at the top of which an 8 in. pipe ejects the water. In each screen of the whole equipment of 15, smaller pipes spray the material.

The screens are of the Gilbert type. The first pair are double in each of which the inner screen rejects the oversize which descends by chute a short distance to a 36-in. disc crusher stationed on a balcony near the top of the washery and below the main belt. From this crusher the material is taken by a short belt back to the main belt. This treatment of oversize is rather an original arrangement. The re-crushed oversize then goes through the washery again and into one of the double screens.

The second, third and fourth rows contain three screens each; the fifth row, two, below which are sand settling tanks; the sixth row, two with two settling tanks.

Efficient Screen Attachment

To increase the efficiency of the screens, an unique attachment is used. Suspended over each screen and bearing down upon the screen's outer surface is a roller which by its weight presses loose or removes material sticking or lodged in the perforations. The company finds this a very useful device.

The bins are of creosoted wood with concrete foundations and have a capacity of 15 cars. Loading tracks on each side of the bins enable the crew, when it is necessary, to load two sets of cars at one time from the same bins, two cars on a track. The company has also found it convenient to load from one side material that it desires to pile in storage, and thereby not interfere with cars being loaded at the same time for shipment. Four men have charge of this work. Spotting is done by gravity and there is trackage for 115 loaded cars.

Winter Equipment

To meet conditions of winter especially, the company has a special small dry screening and jaw crushing unit and also a large locomotive crane.

Elevated midway between the crusher house and the top of the washery and directly below the main belt, built in the conveyor superstructure, is a partly enclosed platform housing the winter screen and crusher. Material to pass through this unit is diverted from the main belt. Below this unit is a pair of rails, making direct car loading operations in winter or summer possible. However, the company has found piling material in washing season better than operating in winter.

The locomotive crane is the "handy man" of the pit. It unloads cars in summer to utilize ground storage; it loads cars from ground storage in winter and is sometimes used in place of the regular locomotive for switching purposes. In addition it acts as substitute for the shovel when the pit shovel is laid up. The company finds it very useful and says it gives fine service.

Much ground storage space is utilized as will be observed in the photographs. Of its holdings, the company has worked over about 53 acres. It has 85 acres in additional land.

Screens and Grades

The screens will produce seven grades, three sand and four gravel, as follows:

Through 1¾ in. screen, size 1½ in.
Through 1¼ in. screen, size 1 in.
Through ¾ in. screen, size ½ in.
Through ⅜ in. screen, size ¼ in.
Through ¼ in. screen, size Torpedo sand.
Through ⅛ in. screen, size Plaster sand.
Through .035 in. (slot), size Mason sand.

In this connection it may be interesting to note the variation of sizes in each grade of gravel produced.

Size 1½ in. includes from 1 to 1¾ in.
Size 1 in. includes ½ to 1¼ in.
Size ½ in. includes ¼ to ¾ in.
Size ¼ in. includes $\frac{3}{16}$ to ⅜ in.

The settling tanks are of the common type, several of which are equipped with

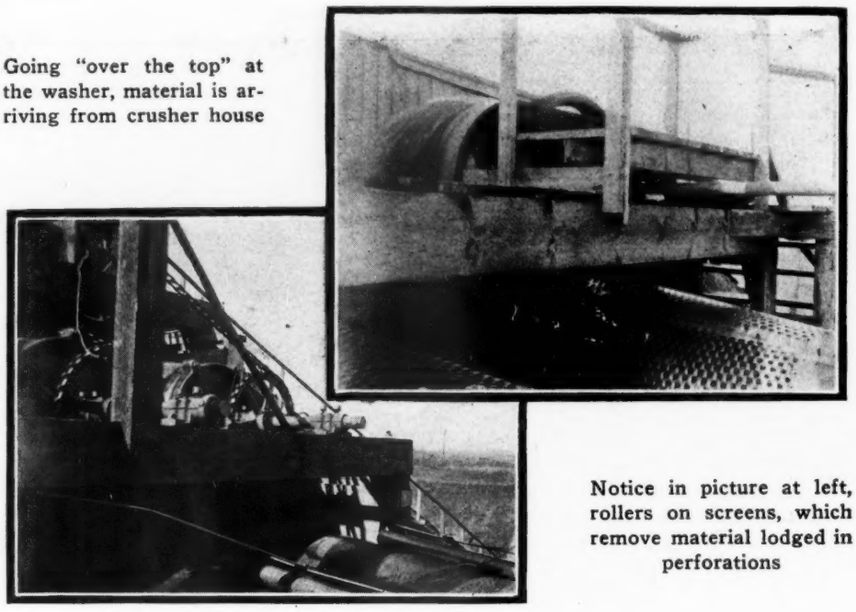
a valve described as having a round disc which closes the sand outlet while the tank is filling. These are giving satisfaction.

The company maintains its own repair shop which is in a frame structure equipped with necessary machinery and supplies. Electric power is used.

W. C. Whitcomb is president; Franc W. Brand, vice-president and A. S. Sorensen, secretary-treasurer. The main office is at 112 West Adams-st, Chicago.

W. R. Webster of Iowa Dies

W. R. WEBSTER, of the Ideal Sand & Gravel Co., Mason City, Ia., a director of the National Association of Sand & Gravel Producers and the secretary-treasurer of the Iowa Sand & Gravel Producers' Association, passed away Monday, Dec. 9, at his home, following a brief illness caused by the influenza. Mr. Webster was one of the most active of producers, not only working for his own particular business but giving much of his time and thought for the benefit of the industry as a whole.



Going "over the top" at the washer, material is arriving from crusher house

Notice in picture at left, rollers on screens, which remove material lodged in perforations

Architects Busy on Many Plans

Apartment Houses and Dwellings in Prospect in New York and New Jersey

NEW YORK—Encouraging signs of better times for the entire building industry are manifest by the growing number of new projects, including moderate priced dwellings and apartments, now being planned by the architects of New York City. The plans for a large part of this work are well advanced and should within a short time be presented to the industry for estimates. The projects that are now in the early stages of planning are not architectural dreams that will be shopped around in the hope of financing them, but authentic structural operations, proposed as a direct result of the sustained demand for rentable space of every description, says the Record and Guide.

On all sides there are current reports of new operations soon to be started and projects held in abeyance for two or three years being revived in order to supply the demand for apartments, dwellings and commercial uses. If only a part of this contemplated construction is started the building interests will have more actual work on their hands than they have had for many months past. Naturally, Government construction has not been considered in this grouping, as this form of structural activity will gradually drop off and be replaced by civil building.

At a conference at Albany last Monday between State Architect Lewis F. Pilcher and Edward A. Keeler, a former president of the New York State Association of Builders, the opinion was developed that contractors will be willing to bid upon State and municipal work at figures approximately 15 per cent below the war-time prices.

Three conditions have been largely responsible for creating this willingness to cut bids for future construction work below war-time prices. The first is the increased stability of labor. The second condition is the reappearance of competition in the delivery of materials brought about by the relief of transportation hindrances and the resumption of long-haul deliveries. The third factor is the elimination of irresponsible contractors during the stress of the war period and the resultant regrouping of contracting firms who have withstood the tests of the war emergency conditions and are at present operating on a sounder business policy than ever before. It was also brought out that material prices will not be lowered to any appreciable extent during the next year or so, and that the wages of skilled labor are not expected to be greatly reduced during the reconstruction period.

The building situation from the standpoint of the speculative interests has improved to an extent that will warrant an early start on the construction of a number of modern apartment houses, one and two-family dwellings and other types of speculative and investment building. Already plans are well-advanced for a considerable volume of work of this character and just as soon as this form of activity gets a start the more conservative among the speculative builders will again come into the market. There is no doubt as to the intensity of the demand for living accommodations in growing neighborhoods in the outlying boroughs of the city nor is there question about the lack of rentable space to supply the demand.

Real estate interests in Brooklyn and Queens have been greatly encouraged by the number of inquiries for investment properties in the sections being improved by the new rapid transit systems.

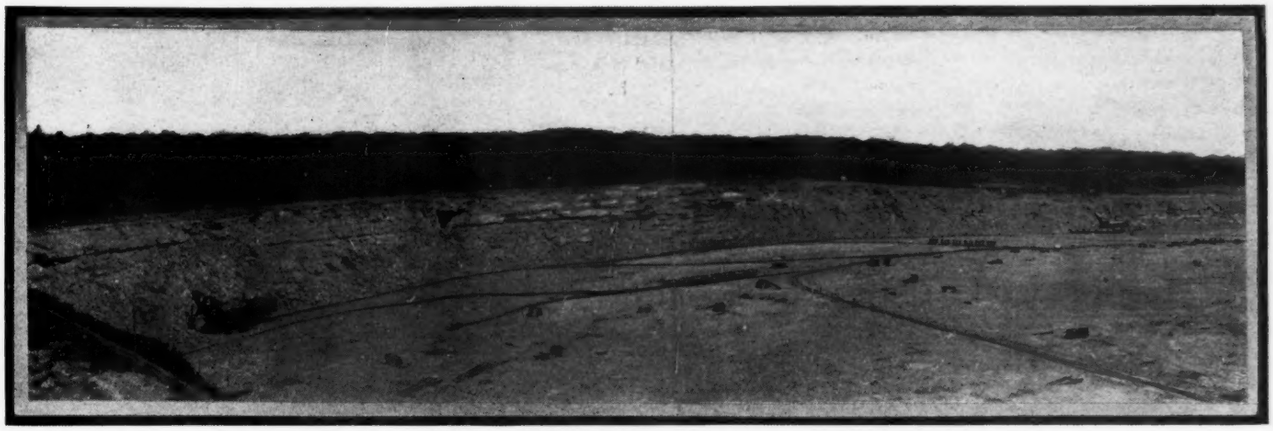
A number of nearby New Jersey cities are also developing apartment house projects that will in all probability be started early in 1919. Newark, Jersey City, Bayonne, Elizabeth, Paterson and Passaic are all active in the market for increased residential accommodations.

Arden Plaster Co. Moves Gypsum Plant

THE ARDEN PLASTER CO., which has maintained a plant at Arden, Nev., for several years is fitting up a building at Avenue 19 and Humboldt-st, in Los Angeles, to which it will remove its plant. Raw materials can now be transported to Los Angeles, a distance of 350 miles, more cheaply than the finished product and there is no longer any advantage in maintaining a plant at Arden.

The new plant will be ready for operation by Jan. 1, 1919. It will employ about fifty men. The company plans to engage extensively in the manufacture of gypsum blocks in addition to the manufacture of plaster, at its plant in Los Angeles.

W. J. Hole is president and general manager of the company, I. B. Murphy, vice-president; B. M. Patterson, secretary and treasurer, and Mrs. W. J. Pierce and W. Bailey, directors. J. S. Thompson is the sales manager.



LeRoy, N. Y., quarry of the General Crushed Stone Co.; note clean quarry floor

Cleanest Quarry and Crushing Plant!

Le Roy, N. Y., Plant of the General Crushed Stone Co. Entitled to Prize for Neatness—How Cleanliness Conserves Equipment and Labor

WHY SHOULD a manufacturing plant look like a junk heap just because the product manufactured is crushed stone? That's the question A. L. Scott, superintendent of the Le Roy, N. Y., plant of the General Crushed Stone Co., puts to his visitors, who never fail to express delight at an inspection of his plant.

As one turns into the plant yard, with its group of neatly painted red and white buildings and a condenser-water pond in the foreground, the first impression is that you have stumbled upon a municipal waterworks plant, in a little park, all arranged for critical public inspection. The macadamized, neatly kept driveways are surrounded by plats of green grass, and altogether one is thoroughly impressed with the fact that such neatness is possible in the operation of a stone-crushing plant.

Plant Is 20 Years Old

Other crushed-stone plants may be equally attractive when new, but this one is about 20 years old. Most of its present equipment has actually seen from 12 to 17 years' service. The plant has the original —the first installation—No. 10 McCully gyratory crusher, put there in 1906. Its 48-in. pan conveyor has been doing business for 17 years. The quarry foreman has been on the job for 19 years, the plant foreman for 19 years, the master mechanic for 8 years.

What is the significance of the long life of equipment and the long service of employees? Superintendent Scott says those are the direct results of keeping things neat and shipshape instead of like a junk shop. From the superintendent down to the quarry laborer, everyone connected with the plant takes honest pride in keeping it looking nice. And why not? Recently we have heard a lot about "keeping up the morale of the army," well, maybe keeping up the morale of stone-crushing plant laborers may be just as important to getting the best results. Superintendent Scott believes so at any rate.

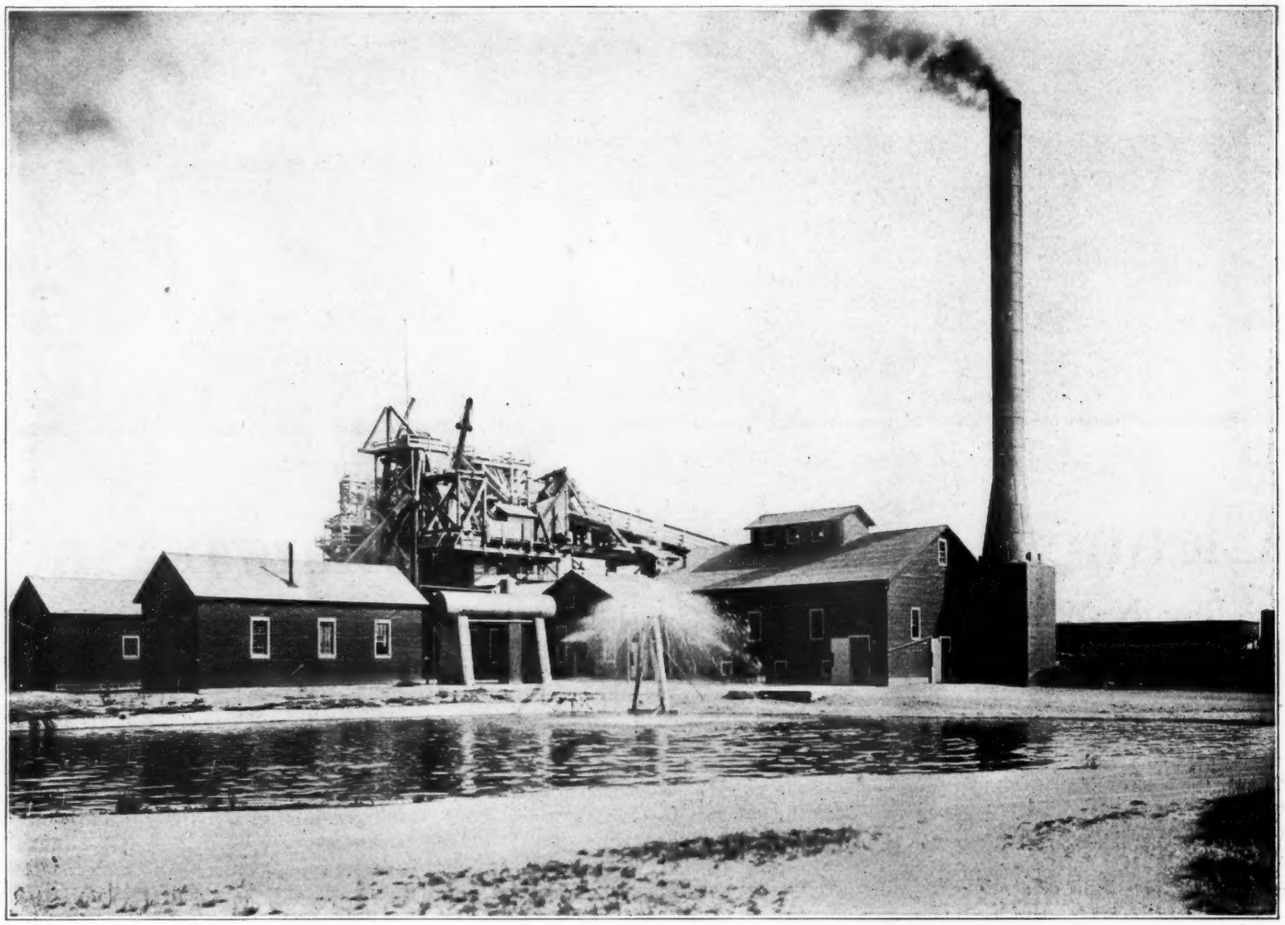
He says, barring the material costs—items such as paint, etc.—it doesn't cost any more to have a neat-looking plant than a disreputable-looking one. As at every stone plant certain essential employees are kept the year around. These men are employed when the plant is shut down, or when they haven't anything better to do, in keeping it shipshape. Having once got the habit it requires no more urging or attention to keep the plant looking nice than it does at any ordinary plant to keep it in condition to operate.

It pays too. The equipment lasts longer, the employees are contented, the townspeople are impressed with the business-like appearance, not to mention any visitors like highway engineers, railway maintenance-of-way men and others who may be influential in bringing the plant business. The more remarkable are the results when it is noted from the illustrations that the crushing plant proper is of the open trestle type with all machinery exposed to the weather.

Plant of 3,000 Tons Daily Capacity

The crushing plant has a daily capacity of 3,000 tons. A season's record has been 400,000 tons. The plant is situated on the main line of the Lehigh Valley R. R. The crushing plant and the quarry are on oppo-

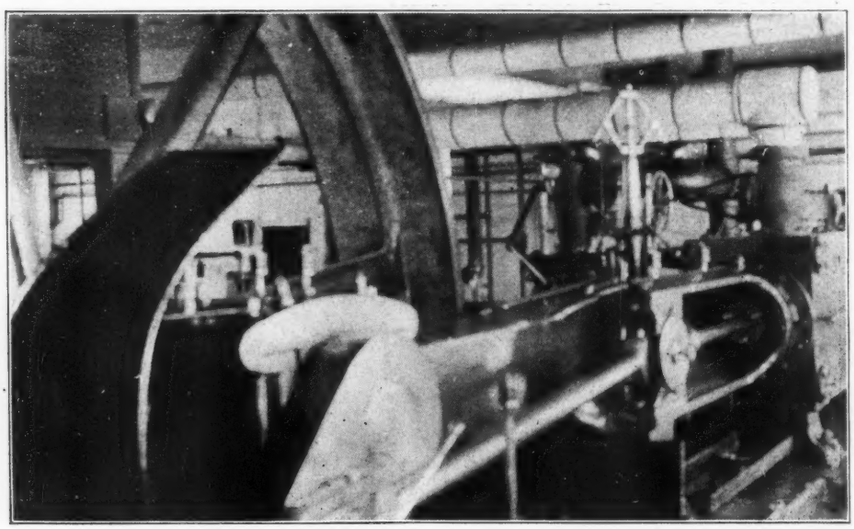
Even the plant office is neat and business-like looking



Crushing plant—Power house on the right, shops on the left, boiler water pond in the center

site sides of the railway. The switch leading to the plant loading tracks is below (to the east of) the plant. Empties are pushed up a gentle incline to storage tracks above the plant. These tracks are parallel to the main-line tracks but several feet above the main line grade, as shown in the illustrations. Cars are dropped down by gravity on the two tracks alongside the loading bins.

The plant has its own power equipment —horizontal boilers and a 350-hp. Bates-Corliss steam engine. The interior of the boiler and engine rooms in every way preserve the neatness and business-like appearance of the exterior of the plant. Everything is bright and shining or white and clean.

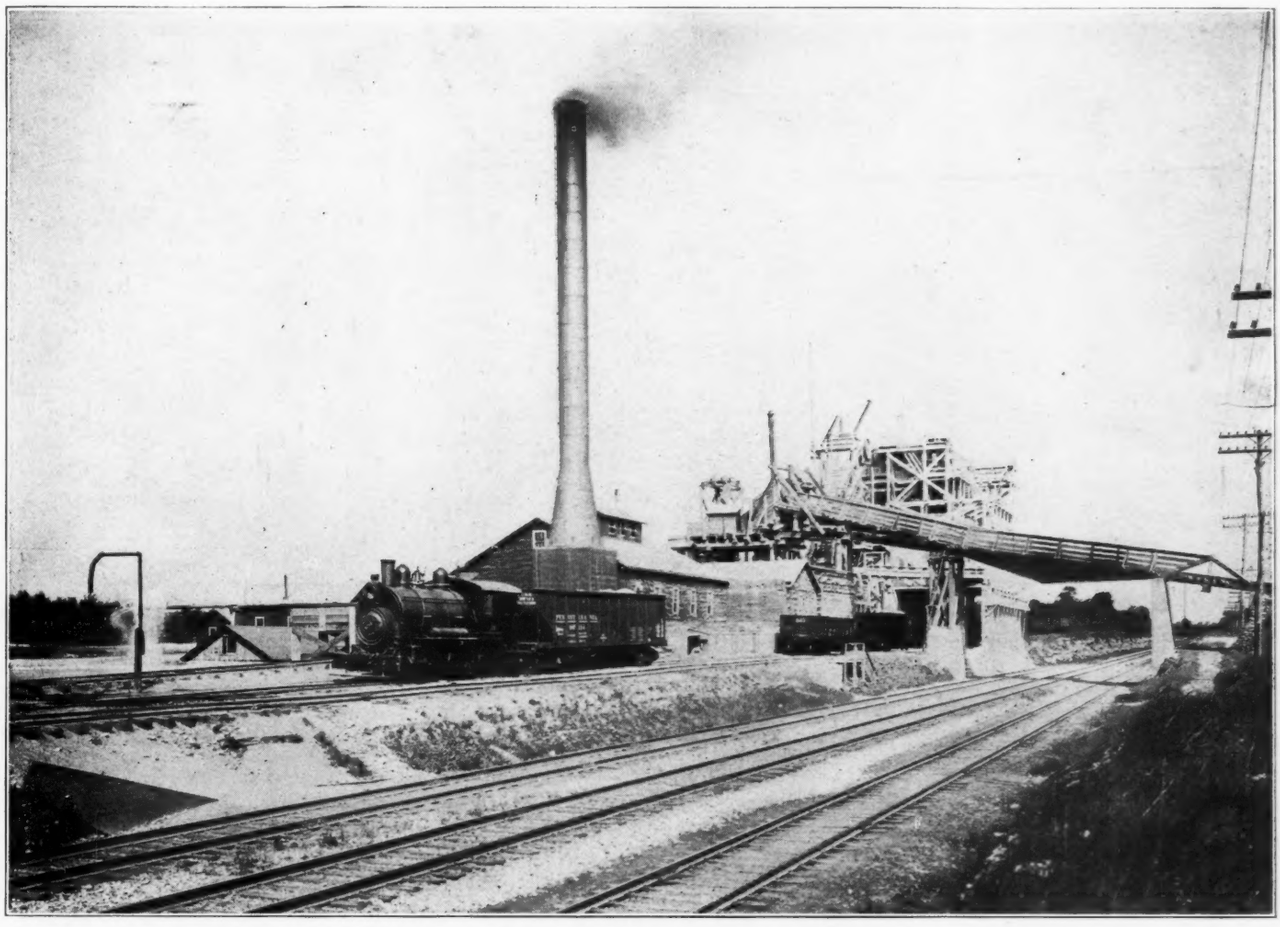


Engine room; polished machinery; covered steam pipes, etc.

The initial crusher is mounted on a tower structure 23 ft. above the ground level. It is fed by balanced hoists skip-cars on an incline railway from the quarry, which passes over the main line tracks of the Lehigh Valley R. R. The skips are of special steel construction and are end-dumping. The hoist for operating them is on the opposite side of the plant from the quarry incline and the hoist man controls their movement by signals.

The initial crusher is a No. 10 gyratory. It is driven direct by a belt from the main-drive wheel of the engine. The elevation of the crusher makes it possible to feed the scalping screen by gravity. The tailings from the scalping screen go to a No. 5 jaw crusher and the screenings (after being rejected by the sizing screens) to a No. 6 gyratory crusher.

The crushed stone is elevated to the top of the plant by a 48-in. pan conveyor, 80 ft. c to c. This conveyor, as already stated, has been in continuous use for 17 years. The jacketed rejection screen is 9 ft. outside diameter and 6 ft. inside diameter by 22 ft. long. There are five sizing screens over concrete storage bins. The outside belt conveyor is for a product made since



Plant from the tracks of the Lehigh Valley R. R.; bridge carries balanced skip hoist cars from quarry—looking west

the rest of the plant was designed—dustless screenings.

Seven sizes of material are produced—No. 4 (2⅜ to 3¾ in.); ballast (2¾ to 3¼ in.); No. 3 (1½ to 2¾ in.); No. 2 (⅝ to 1½ in.); screenings (dust to ⅝ in.); dustless screenings (⅜ to ⅝ in.); and a special size for road work (⅝ to 1 in.).

All the screens are driven by rope drives and the auxiliary crushers and elevator by belts from a tail shaft.

Quarry Operation

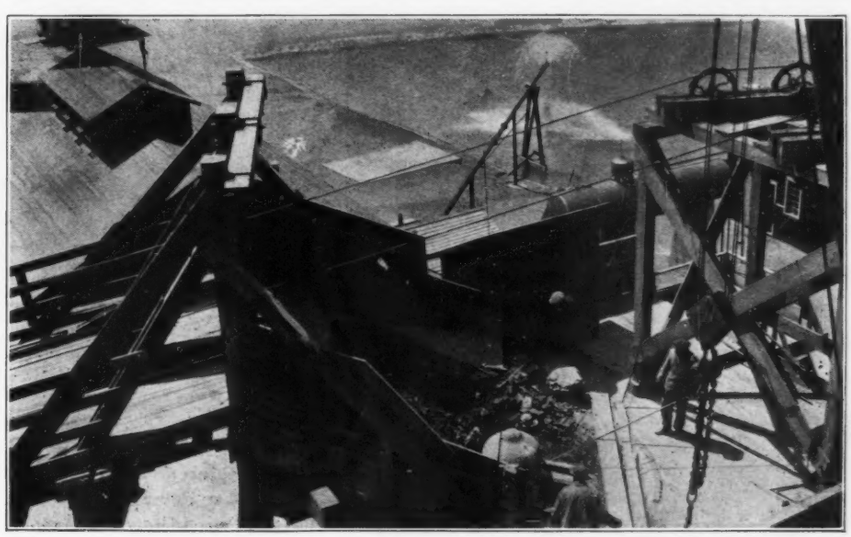
The quarry operation is no less neat and attractive looking than the crushing plant. One's first impression is of its size and the next its neatness. The quarry floor is as clean as a baseball park. The narrow-gauge railway tracks in the quarry are well ballasted and kept in good alignment. The quarry property includes 748 acres.

The stone is a hard limestone. Drilling is done by two gasoline-engine driven well drills which operate to a depth of about 59 ft. Two steam shovels are used and four steam locomotives. The type of cars used in the quarry is the regulation side-dumping contractor or construction cars. The quarry stone is dumped into a concrete hopper at the foot of the incline leading to the crushing plant and brought to the crusher as already described.

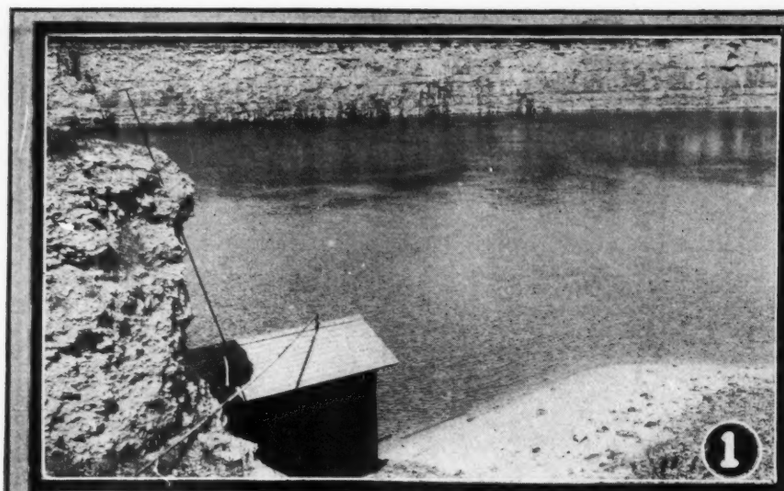
Boiler Water from Abandoned Quarry

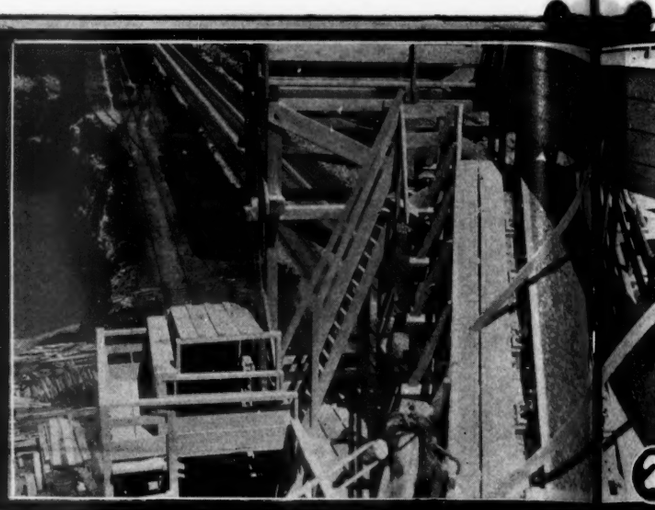
An abandoned quarry working on the same side of the railway tracks as the crushing plant furnishes the boiler water. All well water in the vicinity is so hard as to cause boiler scale to an unusual degree, so the seams and leaks in the old quarry working were sealed with cement grout and the quarry hole used as a collecting basin for snow and rain water.

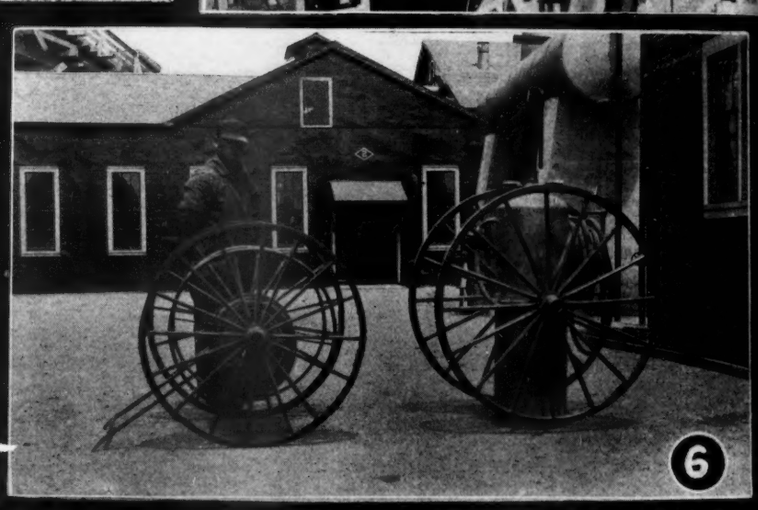
A small pumping plant in this quarry hole supplies water for the plant. The horizontal tank over the driveway, illus-

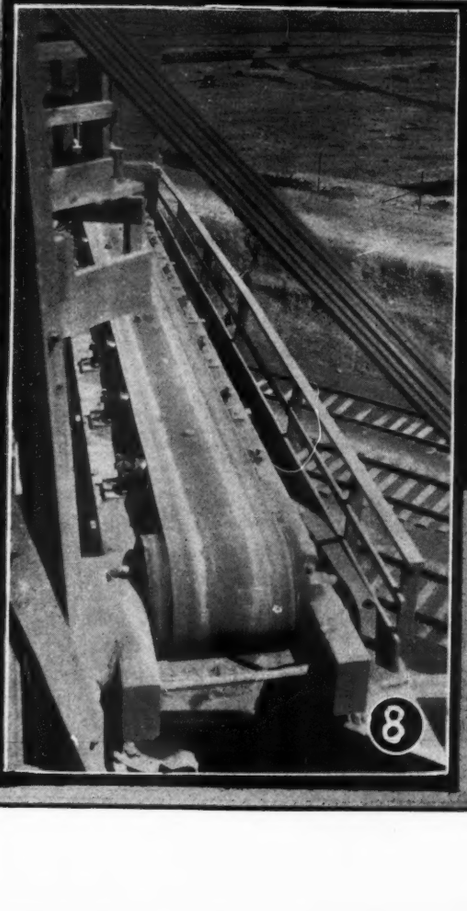


Looking down on crusher platform; boiler water pond in background



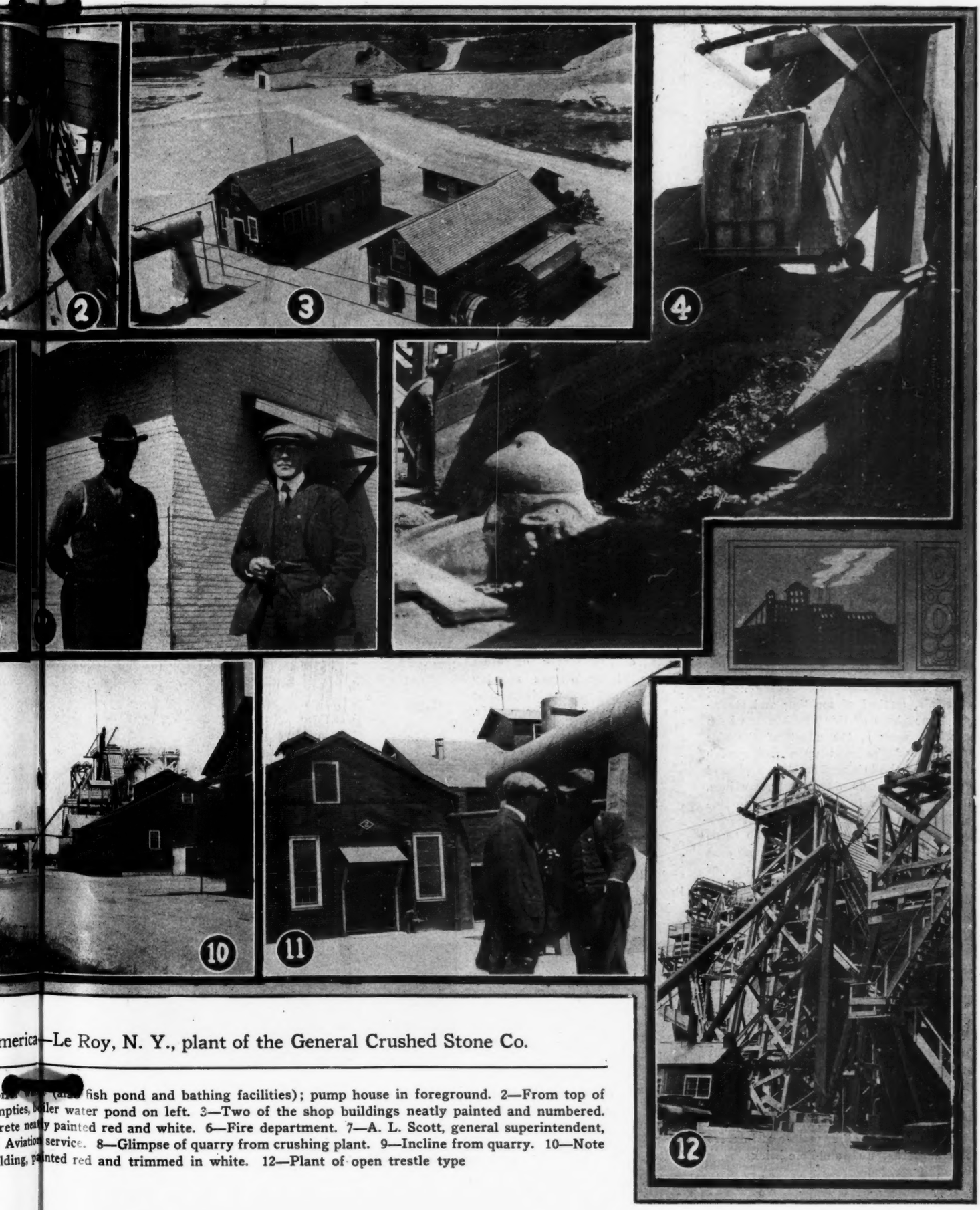






Cleanest and prettiest stone-crushing plant in America—Le

1—Reservoir—snow water in an abandoned part of quarry furnishes ideal bo
plant looking down in Lehigh Valley R. R. tracks (right); gravity tracks for empties, b
4—Skip-car dumping into initial No. 10 crusher. 5—Explosives storage, concrete ne
left; Markley Stevenson, recently sales agent, now in the United States Naval Aviatio
neat grouping of building, clean yard, etc. 11—Shop building, p



merica—Le Roy, N. Y., plant of the General Crushed Stone Co.

fish pond and bathing facilities); pump house in foreground. 2—From top of npties, boiler water pond on left. 3—Two of the shop buildings neatly painted and numbered. rete neatly painted red and white. 6—Fire department. 7—A. L. Scott, general superintendent, Aviation service. 8—Glimpse of quarry from crushing plant. 9—Incline from quarry. 10—Note lding, painted red and trimmed in white. 12—Plant of open trestle type

trated in the accompanying views, acts as a pressure tank on the boiler-supply pipe line.

An unusual feature for a crushed stone plant is the plant fire department. A two-wheel hose carriage and a chemical fire extinguisher comprise the equipment and the engine-room and shop employees are the fire-fighting force. A steam force pump in the engine room can supply several hydrants about the plant.

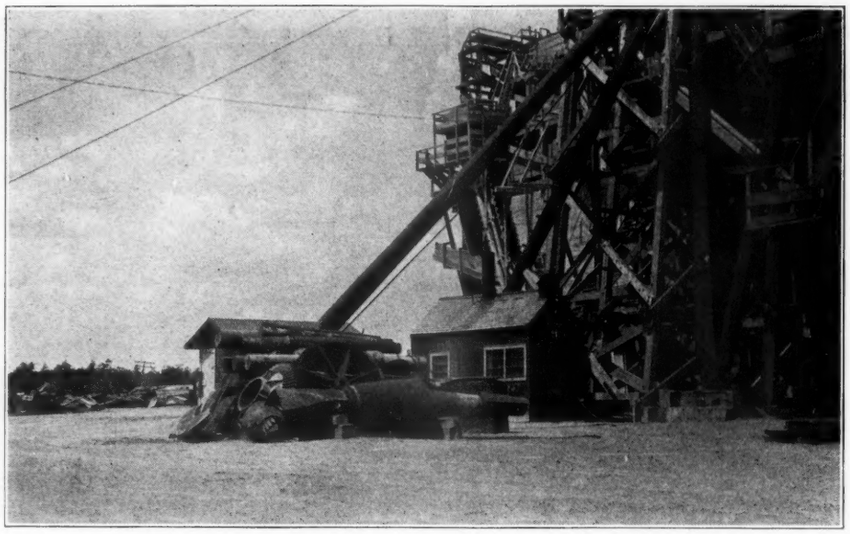
The steam from the engine is condensed and stored in a pond near the entrance to the plant. This water is used in the boilers over and over again.

Plant Organization

The plant organization includes about 120 men for normal operation. These are divided into three groups as follows under (1) a quarry foreman, who has charge of the quarry track, drilling, steam-shovel operation, etc.; (2) a plant foreman who has charge of all plant operations; (3) a master mechanic who has charge of all motive power equipment—locomotives, etc., and who also has charge of the plant repair shops. These are all independent in jurisdiction and report only to the superintendent.

Besides the quarry locomotives the plant equipment includes one standard-gauge locomotive with which the stone company does its own switching, it is also used to operate a one-mile railway connecting with the New York Central, Erie, Buffalo, Rochester and Pittsburgh and Delaware, Lackawanna & Western railroads. A locomotive crane is also used to handle material in ground storage piles.

This plant is an object lesson in quarry-plant housekeeping. Great credit is due Mr. Scott and all his subordinates for making a stone-crushing plant a "regular place." Also no less credit is due John Rice, president of the General Crushed Stone Co., Easton, Pa., for the encouragement he has given in bringing about this condition of things.



All loose machinery and spare parts are neatly piled in one place

Find Best Mixture for Sand-Lime Brick

THE U. S. Bureau of Standards in its report for the fiscal year 1918, just made public, states that some progress has been made in the past year in testing of sand-lime brick for improving its quality.

This involves the proportioning of the materials, method of molding and steaming. One phase of this problem has been attacked, namely, the effect of the size of grain of the sand upon compressive strength of the brick. Three sizes of sand were mixed in 63 different proportions. These sizes were 10 to 40-mesh, 40 to 100-mesh, and 100 to dust. The strongest brick were obtained with mixtures of 30 to 60 per cent 100-to-dust sand, 40 to 70 per cent 10 to 40-mesh sand, and 0 to 20 per cent of 40 to 100-mesh sand. The strongest specimens (1½-in. by 2½-in. cylinders) had a compressive strength of 6,500 lbs. per square inch.

The director also reported that the sand-lime brick industry has been seriously hampered during the past year by inability to obtain lime and coal when needed. The principal technical problem at the present time is the saving of coal required to produce steam in the steaming process, but on account of lack of help the bureau has not been able to attack this problem.

The annual report of the Director contains a wealth of valuable material on hydrated lime and other matter of interest to manufacturers of sand-lime brick.

Logan Waller Page Dies in Chicago

LOGAN WALLER PAGE of Washington, director of the United States Bureau of Public roads, died suddenly of heart disease at 10 o'clock Monday night, December 9, in his room at the La Salle hotel, Chicago. Mr. Page had been the victim of a heart attack earlier in the evening at dinner. He collapsed suddenly and fell over on his bed, while his assistant, J. E. Pennybacker, chief of management of the roads bureau, was giving him a sedative for the earlier attack. By the time the house physician arrived five minutes later, Mr. Page had succumbed.

Mr. Page had come to Chicago from a cross country trip of road inspection to attend the convention of the American Association of State Highway Officials at the La Salle. He had also come to meet with his ten assistant engineers of this district.

Mr. Page had been a pioneer in good highway work. He was the inventor of several machines used in highway improvement. He was 48 years old.

The deceased was a cousin of Ambassador Thomas Nelson Page of Rome and of Walter Hines Page, the well-known publisher, former ambassador to England.

He was a graduate of Harvard University and a member of many clubs and associations.

Logan Waller Page

Problems of the Lime Industry During the Reconstruction Period

Address of Charles Warner, President of Charles Warner Co., Wilmington, Del., at Group Meeting of War Service Committees at Atlantic City, Dec. 5

TO UNDERSTAND the viewpoint presented in this statement, it is necessary to have before us the high points of the Lime Industry of the United States as they appear at present. Lime products find their way into three entirely different lines of consumption:

1. **Construction:** Where lime is used in nearly all classes of buildings and other types of new construction work, primarily as a mortar and plaster.

2. **Agriculture:** Where lime is used to strengthen and rectify soils, to render inactive fertilizer elements available, and in many other ways to increase the productivity of a large percentage of the soils of the United States, particularly those soils lying east of the Mississippi river.

3. **Chemistry:** Where lime as a raw material, directly or indirectly, participates in numerous industrial chemical processes.

The annual sales of lime products in the United States at this time amount roughly to about 4,000,000 tons, valued at from $30,000,000 to $35,000,000. Because of the tonnage and price relation, coupled with the extended distribution of raw limestone products throughout the world suitable for the manufacture of lime products, the range of economic traffic distribution in this industry is limited. The possibilities of export business are also slight for the same reason.

The use of lime products during the war period has been such that a relatively small proportion of the output of this industry has been directly purchased by the Government. The Government did not feel called upon either to commandeer plants or to undertake any extensive study of the costs and profits of the industry, looking towards the establishment of selling prices, prior to the signing of the armistice.

Tariff Protection

As the lime industry is almost entirely dependent on three raw materials, limestone, fuel and labor, problems of importing raw materials do not affect this industry except as necessary protection of our domestic deposits of limestone and labor employed in operating quarries would indicate the need of a suitable tariff. The importation of finished lime products does, however, affect the probable home development of many lime enterprises where they are located contiguous to the frontier and coast districts; and if our home enterprises where so located are to have their fullest opportunity for development, a proper tariff protection must be extended.

Increased Use for Agriculture and Industry

During the war, the lime industry found its consumption curtailed extensively in the construction field, but substantially augmented in the agricultural and chemical fields. Taking the industry as a whole, the net result of these changes in demand will probably show an aggregate net loss of some tonnage during the year 1918 just closing.

While individual lime plants, more particularly those whose main line of business prior to the war has been in supplying material for construction use, found their business and profits substantially reduced, yet, taking the industry as a whole, it has survived the war period with safety and without critical realignment of its working relations.

Well Conditioned for Future

The lime industry therefore faces the reconstruction and peace period with less misgivings than many other industries, though fully realizing that the curtailment of Government activities without the prompt replacement by general commercial activities and re-establishment of less essential work, creates a menace to this industry. The new stimulus to increase production by reason of more plentiful fuel and labor, taken in connection with a possible decrease in demand for finished lime products during the early reconstruction period, can quite possibly bring about such competition as to force market prices down to or below the cost of production.

As the lime industry has for years suffered to a considerable extent from over-production, modified with short periods of seasonal or commercial activity temporarily increasing the demand, the industry has not had the surplus earnings to enable it to move forward with the impetus found in many other American industries.

Favors Ample Provision for Association Work

The lime industry is therefore vitally interested in a number of the bigger issues which are likely to affect industry in general during the temporary reconstruction period and the permanent peace period now before us. We deem it most important for the Government to continue to encourage organizations in every industry during the peace period as it has during the war period, that each industry may develop within itself by frequent interchange of views between competitors to aid in the growth and the strengthening of our commercial welfare.

These organizations should be encouraged by the Government to do research work, through collective effort, in conjunction with the various permanent Government bureaus whose work has a bearing on the particular industry. Each industry should be encouraged, through co-operation with such Government bureaus, to issue accurate information relating to the use of its products through national propaganda and in other ways.

Co-operation But Not Government Paternalism

In peace periods we do not favor the development of a paternalistic attitude by the Government in supervising, directing and governing the activities of industry; but rather the encouragement of a co-operative relationship. There is as much difference between supervision and co-operation as there is between paternalism and fraternalism.

The co-operative relationship fostered and encouraged by such a body as the Federal Trade Commission, properly enlarged to so function, can lead the way to co-operation between industry and the Government bureaus which will be mutually helpful and educational alike to the industry and the Government. In the end, this aid to consumers establishes a greater confidence in and a broader use of the particular products to the benefit of both producer and consumer.

There is at present a definite step in process by the Government in cutting the paternalistic red tape that has been woven temporarily by the Government in its administration of many industries, to meet the special conditions growing out of the war. This is a step in the right direction, providing we can retain certain parts of the temporary war system to form the nucleus of a new co-operation between the Government and industry for mutual helpfulness.

We see in our industry instances here and there of manufacturers, through ultra fear of the Sherman and Clayton laws, refusing to join and support an association even though it does not directly deal with any question of price. This tends to destroy the effectiveness of such an organi-

zation, to make those who are aiding in its support feel luke warm towards it; and leaves the fearful ones to benefit by the efforts of those constructively inclined. A specific Government encouragement of such organizations and definite plans of co-operation in research and propaganda work will directly act to bring in the fearful and strengthen the whole morale of the industry.

Future Price Fixing Policy

On price questions, we urge an exhaustive study by the Government through the appointment of a special commission of business men or a special committee of the National Chamber of Commerce for the purpose of determining specifically whether the principles underlying the Sherman and Clayton laws are sound or false in their effect on legitimate industrial growth.

If industry is to be forward moving on a sound basis, it must have ample and stable earnings in amount not alone sufficient to take care of all operating, maintenance, depreciation and interest charges upon the funds actually employed in the industry, but also sufficient to take care of the business risks and to allow sums suitable for development. In our estimation the country does not suffer from an industry enjoying good earnings, providing those earnings do not exceed reasonable limits, for the reason that such industries can grow more rapidly for the benefit of the stockholders, the workers and the citizens at large.

Anti-Trust Laws Should Be Modified

We submit that it is fundamentally wrong to place business men in any particular industry in a position requiring illegal action in a secret manner to sustain prices for the purpose of merely existing. Yet this is a condition that confronts the business men periodically in many industries and one which, not infrequently, leads them to discredit and subvert the laws of our land in their efforts to merely sustain their industry; whereas they should be in a position to secure reasonable average earnings not alone sufficient for sustaining it, but for the proper development and extension.

It has, therefore, appeared to the lime industry on many occasions that the possibility of bettering our whole national life and industrial development by a complete reversal of the principles found in the Sherman and Clayton laws justifies most careful study by the biggest brains in our country. We fully recognize that if a complete reversal of this Governmental policy should lead towards permitting industries to consider the establishment of fair living and growing prices through direct co-operation, that a brake must be placed upon this privilege by the Government itself, in behalf of our citizens as a whole, so that no particular industry would overstep the mark by establishing extortionate prices and reaping unreasonable earnings.

Suggested Method of Price Fixing

We have fully in mind the restrictive effect noted at times in the actions of the Interstate Commerce Commission in establishing freight rates which, in the public estimation, have directly handicapped the development and growth of some railroad systems so that they have not progressed and enlarged their facilites and service in keeping with community needs. We submit, however, that the question is worth studying as to whether more liberal provisions could not be enacted in a new law, or an amendment to existing laws which would permit industries under certain conditions to agree on the establishment of market prices for their commodities if they so elect. For instance, it might be recognized by law that industries, according to their nature, hazards, supplies of raw materials, etc., should be divided into divisions which would be allowed to earn upon the capital invested a rate of, say, 8, 12, 16 and 20 per cent. These earning allowances should be taken on the average rate of the industry and not on the individual enterprise. If a substantial number of the enterprises in any particular industry, say, 75 per cent of the total production, should desire the privilege of combining on price arrangements, the proper preliminary data could be submitted to a Government committee for initial classification in a suitable earning group. If those enterprises then wish to proceed on a price agreement, they would have to provide the Government with necessary information on earnings at stated periods, in accordance with a standard practice of bookkeeping agreed to by the Government commission.

The average earnings of all the enterprises agreeing to such a working plan in a particular industry should be taken as the basis of earnings allowed for the industry, under the group classification previously established.

Such a working arrangement with the Government, in its optional form, might save many an industry at times from serious financial ruin in a number of its component enterprises.

Initiative and Competition Preserved

As such permissable earnings would be taken on the aggregate results of an industry as a whole, the great asset of individual initiative would not be destroyed and the individual enterprise would still have the possibility of profiting by the development of economies in production and improved business practices without the immediate Government exaction in lower selling prices except in such instances where the particular enterprise would be supplying a large part of the total production in the industry.

Of course, it stands to reason that if an industry did not care to disclose the earnings of its individual enterprises engaged in the industry for a sufficiently large percentage of the total to justify the Government's permission to agree on market prices, then the industry should still be subject to the present order requiring the secret competitive conditions demanded by the Sherman and Clayton laws.

If any industry should enter into a price agreement, it should, of course, have the privilege of cancellation at stated periods and individual enterprises should have the same privilege of withdrawing from the price agreement at the stated periods.

We submit these suggestions merely as lines upon which a study might be undertaken by some national committee of business men to see whether there be another working basis for industry that could be developed both to the benefit of the industry and the country at large.

Government by Business Men

The lime industry also strongly endorses the principle that all Government commissions or bureaus, having authority in regulation of industry, should have included in their personnel practical business men of the broadest experience. This principle is of direct importance in introducing sane business experience and judgment into the deliberations and decisions of Government commissions and bureaus. The following of such a policy directly aids to foster an understanding relation between industry and Government bodies and should be encouraged to the utmost.

Labor Problems

Under the general heading of labor problems we feel that much educational work needs to be done both among employers and employees which calls for national action. The reconstruction period may call upon employees and employers alike to be reconciled to reductions in the value of their service and prices. We face a condition wherein certain groups of labor will unquestionably have to accept some reduction in the rather abnormal incomes that they have been receiving under stress of war demand.

The munition workers who were engaged in work that was little if any above that of common labor during the pre-war period, but who were temporarily pushed into positions where they could earn two or three times their normal wage, must now necessarily return to work and compensation more in accord with their pre-war status. They should realize, through enlightened propaganda, that for a time at least, during the reconstruction period, they must be reconciled to a return to less important work, though the hope should naturally be held out to them that after the reconstruction period, and upon our country hitting its permanent peace prosperity gait, better opportunities should be opened to all under the new order.

Such steps must follow to a reasonable extent with the reduction in prices of some of our commodities, where industries have

been abnormally profiting during the war period, so that, in part at least, our country may return to a better cost basis by liquidation of particular classes of labor and in particular groups of enterprises which have been especially favored under the war stimulus.

It appears probable that for some months to come there may be a surplus of labor. On this point there are a great variety of opinions and much depends upon the policy of the present administration in its cancellation of war contracts and demobilization of the army. This work appears to be progressing with some degree of judgment and we should certainly encourage the administration to exercise the utmost care in cancelling war contracts so that an undue surplus of labor shall not be developed before the spring activities of 1919 permit the employment of larger labor forces.

Looking towards the permanent peace prosperity period that should be with this country in some six to twelve months, we face a possible shortage of labor shortly after the passing of the early reconstruction period.

Future Labor Shortage Likely

For instance, through certain recent surveys of a special committee connected with national Americanization work in this country, it has been determined with considerable accuracy that between one million and one million five hundred thousand foreign-born workers now in America plan to return to their native countries. This labor would be taken largely from the common labor or semi-skilled classes and its loss would doubtless be felt to a considerable extent when our peace prosperity gets into good swing.

Many of these foreign-born workers who have, through recent surveys and straw votes, indicated their intention of leaving this country, may still be retained in America by active and practical Americanization work conducted on sound industrial lines. Enlightened Americanization work is not a welfare issue today but an industrial problem.

Americanization Work a Business Proposition

It has been demonstrated in sections here and there that real action on the part of Americans to encourage the assimilation of our foreign-born, to give them educational opportunities for learning English, etc., has a most direct effect in changing their minds so that they feel more at home in America, better satisfied to stay here and reconciled to accept it as their permanent place of abode.

In many of our foreign-born, who have been on our shores for years without any help or encouragement in these lines of Americanization, we find only a desire to accumulate as much money as they can and then return to the old country. To give them a knowledge of the English language helps to make them more valuable and safer employees in our plants.

The lime industry has much of this class of labor through its plants and strongly endorses this immediate and nation-wide program as a direct industrial issue, believing that it is still possible, through the intelligent handling of this problem, to hold to our shores permanently, many of those who at present are planning to return to their own country within the next few months.

Against Government Ownership of Railways

It is the opinion of those connected with the lime industry that Government ownership of railroads is highly undesirable from the broad viewpoint of our national welfare. The destruction of individual initiative in business life and the establishment of large Government forces with dulled ambitions and subject to politcal influence, is to be greatly deprecated.

On the other hand, we will recognize that certain steps in railroad consolidation, accomplished temporarily under the stimulus of war needs, have permanent peace advantages in providing broader facilities and economies in behalf of the public. The advantages of the steps gained during war in such directions should not be lost but should be studied and enlarged in working out any plan for returning the railroads to private control. Enlightened Government supervision can doubtless be developed to hold the good that has been accomplished during the war period consolidation yet to give our country the permanent advantage of encouraging private initiative in the economical handling and development of our railroad systems.

Public Work Should Be Encouraged

In conclusion, in presenting the viewpoint of the lime industry, we feel that a national request should be issued by the administration urging that new work in the state and municipal fields be gotten under way promptly in order that construction may be started as soon as the weather permits. There is much of such work on the carpet and a proper urging from the administration would assist materially to start such construction promptly. The administration policy in this respect, of course, involves the proper attitude and action on the part of the Capital Isssues Committee and a broad appeal to banking and loaning institutions to liberally support all new work in the practical and needed classes so that the risk of business depression and the danger of unemployed labor at this critical time of unrest in the history of the world may be minimized to the utmost in our own country.

AT the Atlantic City meeting of the War Service Committee on Lime it was decided to form a National Advisory Committee on Chemical Lime.

Camp Resigns from Lime Association Staff

TO RE-ESTABLISH the Lime Service Bureau, which he successfully conducted before joining the staff of the Lime Association as Manager of the Agricultural Lime Bureau, Henry M. Camp has resigned, effective Nov. 30. In accepting his resignation the manager of the Lime Association, Robert F. Hall, makes the following announcement:

"It is with extreme reluctance that the association accepts the resignation of Henry M. Camp, from the association staff. Only the conviction that in resuming his former work as proprietor of the Lime Service Bureau, he is serving the industry well, would reconcile us to his loss as director of the Agricultural Bureau. We take this opportunity of wishing Mr. Camp every success in his new work, and we know that in this we express the sentiments of the entire membership.

Prof. A. E. Grantham is New Director

"To succeed Mr. Camp as Director of the Agricultural Bureau, the Executive Committee authorized the appointment of Professor A. E. Grantham, who will take up the work at once. Professor Grantham for eleven years has been the head of the School of Agronomy of the Delaware State College, and is considered by the United States Department of Agriculture as one of the leading men in the country in this field. The association is fortunate to have secured the services of such a man."

Agricultural Lime Rates

SPECIAL RATES for ground limestone for agricultural purposes on the railroads are now being actively sought for in many cases, and there is some interesting argument being brought to bear in support of the contention that the rates on agricultural limestone should be lower than those on ordinary crushed stone. One strong argument is that encouraging the use of such limestone not only makes original tonnage for the railroads where heretofore there was no tonnage, but it makes for better crops, which in turn mean an increased tonnage of farm products to market.

Then added to this it means more prosperity in the agricultural districts, which in turn means more purchasing power and more tonnage of merchandise, machinery and other manufactured goods for the farm trade. Probably the most effective lever in moving to this end will be found, though, not so much in logic and argument as in the fact that the governmental authorities have a natural inclination to favor the farmer. So if the farmer wants the cheaper rates, and can be induced to say so in the right manner, that will count for something, too.

In some states the crushed stone rates are so much lower as to discourage the production of the pulverized stone.

Bureau of Standards Testifies to Value of Hydrated Lime

Report for 1918 Retracts Statements Mad ein Previous Report on Effect of Hydrated Lime in Concrete

WASHINGTON, D. C.—Because of the fact that very little experimental work has been done for the purpose of clearing up certain disputed points regarding the use of hydrated lime in concrete, the Bureau of Standards of the Department of Commerce has for the past two years been making a number of investigations, according to the report of the director, S. W. Stratton, for the fiscal year 1918, which has just been submitted to the Secretary of Commerce.

"The use of hydrated lime as one of the ingredients of Portland cement concrete has been rapidly increasing during the past few years," the director reported. "From observations made under working conditions some engineers and contractors make the following claims as to the benefits derived through this practice: Concrete containing hydrated lime requires less water for mixing, is more plastic, separates into gravel and mortar less readily, flows down chutes and into forms more readily, is stronger, denser, and more impermeable to water than concrete not containing hydrated lime.

"Laboratory work in this investigation has been in progress for two years. The following physical properties of concrete have been studied: Compressive strength, bond strength with steel, expansion and contraction with time, amount of water absorption, density of the fresh concrete, modulus of elasticity.

Statements in 1917 Report Retracted

"The results have not been completely analyzed on account of the difficulty of choosing the proper basis for comparison. On this account the general tendencies noted in the annual report for 1917 were inaccurate in degree and the statements therein given are to be modified to agree with the present understanding of the effect of different factors upon properties of concrete.

"At the present time the most compreprehensive and logical basis of comparison seems to be a factor known as the water-ratio. This factor, which bears a mathematical relation to compressive strength, is found by dividing the volume of water by the volume of cement used in the concrete. Using this factor as a basis the results show that concrete containing hydrated lime is on the average stronger than concrete without lime, the increase in strength being the more pronounced in air storage specimens and in concrete having the higher water-ratios. Results for the other properties mentioned have not yet been compiled for comparison in this manner.

"In regard to the remaining properties, it may, however, be said that the laboratory specimens having all been made with great care did not give so large a degree of difference in properties due to the introduction of hydrated lime as is claimed by contractors and engineers to occur under the conditions of construction work. Moreover, the laboratory results told nothing of the effect upon time of flow down chutes, plasticity, degree of segregation, etc.

Field Investigations Under Way

"For this reason it has been decided to conduct an extensive investigation under working conditions. Preliminary work will be conducted by use of an experimental concrete plant now erected. Following this, observations will be made at various large construction works.

"The commercial product known as hydrated lime has been upon the market comparatively few years, and although it is manufactured by about 85 companies no complete determinations of its physical and chemical properties has been made. About all that has been known concerning this product is that it has replaced quicklime for a number of the purposes of construction.

Physical Tests

"During the past three years physical and chemical tests have been made upon 54 samples of hydrated lime collected from all parts of the country. The data affords a fairly complete knowledge of the properties of this product valuable alike to producer and consumer, enabling them to improve the quality and to write accurate specifications.

"Lime manufacturers have become accustomed to use the term plastic lime as meaning a lime producing a paste when slaked and allowed to stand with water, this paste being capable of retaining its water long enough to be spread easily and smoothly upon an absorbent surface such as is provided by the brown coat wall plaster. Under these conditions the rate of plasticity is more important than the absolute plasticity.

"The bureau has designed an instrument now known as the Emley plasticimeter for the purpose of measuring the relative rate of change in the forces acting between a paste and a trowel while the paste is drying out upon an absorbent surface. By this means lime pastes have been classified into plastic and non-plastic pastes, using the manufacturers' definitions. About 25 hydrated limes from all parts of the country have been tested.

"A mathematical definition of plasticity as applied to the use of lime was not obtained and until considerable more work has been done along this line, it will be necessary to use the trade definitions."

Using Hydrated Lime in Concrete Roads

A SUMMER'S experience with hydrated lime in concrete work and in other structural uses apparently has convinced the engineers of the Du Pont, Hercules and Atlas powder companies. Hereafter they will require the use of hydrated lime in concrete.

Likewise a little experimenting under the direction of T. B. Shertzer, by Charles U. Upham, engineer, State Highway Department of Delaware, has brought about better results in road making under the engineer's charge. He has started the construction of a nine-mile concrete road, using 10 per cent of hydrated lime by volume of cement. Under persuasion of Mr. Shertzer, he tried other proportions and soon learned that 15 per cent showed an improvement in workability.

Capt. G. R. Roe at Picatinny Arsenal, Dover, N. J., will use five per cent of hydrated lime in the construction of a $100,000 concrete road on the arsenal grounds.

Charles H. Johnson of Many Limestone Plants Dies

CHARLES H. JOHNSON, associated as an executive with his father, George W. Johnson, of New Castle, Pa., in numerous limestone enterprises and in other lines, died, December 10, 1918, at his home in New Castle after four weeks of illness.

Mr. Johnson was general manager of the Pittsburgh Limestone Co., the G. W. Johnson Limestone Co., the Lawrence Limestone Co., the Keystone Limestone Co., and the Mahoning Limestone Co., which companies have quarries in Lawrence, Butler, Blair and Armstrong counties and also in Maryland and West Virginia. He was president of the Johnson Bronze Co., the National Stone Co., and the Bessemer Loam-Sand Co., was also vice-president of the Lawrence Savings & Trust Co.

He was a graduate of Allegheny College. After a period with the Mesaba Ore Range in Minnesota, he joined with his father in the operation of a sheet mill which was converted into a tin mill and later sold. Since that he has been actively engaged with his father in the limestone business and other industries. As his career proves he was a particularly capable organizer and business man. His father, his wife and five children survive him.

Tests of Fineness of Grinding and New Process Portland Cement

U. S. Bureau of Standards Reports on Busiest Year in Its History—Cement Made Experimentally Without Alumina

WASHINGTON, D. C.—A great deal of very important investigatory work in cement and concrete was completed during the past year by the Bureau of Standards of the Department of Commerce, according to the annual report of Director S. W. Stratton, which has just been submitted to the Secretary of Commerce.

The work of the cement section during the year was radically affected by war conditions, and several of the normal continuing investigations were largely set aside by the continually increasing amount of emergency and special work. Accordingly, it has been impossible to do any work in connection with the investigation of the value of integral waterproofing compounds, the durability of concrete in alkali waters, nor upon the further development of the granula-metric analyzer and air separator for cement.

The standard specifications for Portland cement, which became effective January 1, 1917, contained a clause to the effect that on and after July 1, 1918, the Government specification would require an increase in fineness, reducing the permissible residue on the standard No. 200 sieve from 22 per cent to 20 per cent by weight. At a meeting of the Departmental Cement Committee on April 2, 1918, the postponement of this requirement was discussed and a resolution adopted recommending that the change become effective six months after the close of the war instead of on July 1.

Testing Cement for Government Construction

"The tremendous expansion of military and naval activities during the year has been accompanied by a corresponding expansion in the construction program of the War and Navy Departments," reports Director Stratton, "and the facilities of the bureau have been taxed to the utmost in providing the inspection service required by the increased use of cement alone. The appropriations of the bureau for testing structural materials have been entirely inadequate to cover the costs of this work, and its continuance throughout the year was made possible only by reimbursements from the War and Navy Departments and the Shipping Board. Further, the shortage of available and experienced inspectors has been acute, owing primarily to the fact that the salaries established for this class of employees are not attractive to men over the draft age.

"During the year cement was inspected at 78 mills throughout the United States, as compared with 16 mills in 1917. The increased service which has been rendered during the past year is clearly shown by the monthly shipments of cement inspected and tested by the Bureau."

According to the figures given, a total of 3,597,354 barrels of inspected cement were shipped during the year just ended, as compared with 502,885 barrels during the preceding year. These totals do not include 72,000 barrels of rejected cement in 1917 and 331,000 barrels of rejected cement in 1918.

Fineness Tests Continued

Despite war conditions, the bureau has been able to continue the series of tests started in 1916 to determine the effect of increased fineness on the cementing value of cement in mortar and concrete, and the results show the same marked decrease in strength with the finer ground cements as did the preceding tests.

"With knowledge of the general results of this investigation the department of concrete ship construction of the United States Shipping Board, Emergency Fleet Corporation, requested further comparative tests on various cements produced in the southern districts, both as normally ground and as reground to a fineness of 90 per cent through 200 mesh in 1:12, 1:1½:3, and 1:2:4 concretes and in 1:2 mortar. In practically all cases the increase in compressive strength obtained with the finer cements was from 50 to 100 lbs. per square inch for each per cent increase in fineness. From all the data obtained in this investigation the order of increase in strength which may be expected from finer grinding by ordinary methods is now fairly well established, and the question of requiring higher fineness in the standard specification for Portland cement is a purely economic one.

"There remains, however, the highly interesting and almost wholly unattacked problem of producing cements of much higher fineness than is possible by ordinary methods of grinding. It may confidently be expected that if practical methods can be found of reducing cement clinker to a very fine state of subdivision, a decided improvement in quality will result; to determine what degree of improvement may be obtained is properly the next step in this investigation. The importance of further progress along these lines is commensurate with the difficulties to be overcome in developing new methods of grinding, and concentrated effort will be required to deal with the new problem effectively."

Tests of Blended Cements

Some studies have been made of blended cements in which diatomaceous earths from two sources have been ground together with Portland cement in various proportions. The results obtained in concrete at early periods indicated that the blended cements were inferior to normal Portland, but at six months a slight reversal was noted. In view of this unexpected development, a more comprehensive investigation will be undertaken to confirm these results.

Constitution of Cement

The constitution of cement was also investigated during the year, although the demands made on the bureau by other departments of the Government for help in testing the cement purchased by them resulted in largely reducing the work it was found possible to do. However, the director made the following report of work accomplished along this line:

"It was found possible to determine quantitatively (approximately) the constitution of a large number of Portland cements made by the bureau of a widely varying composition, as a check on determinations made previously by another petrographer. These data have been plotted in such a manner as to show the effect of the different amounts of each constituent on the compressive strength of a 1:1:4 mix gravel concrete. These curves show very strikingly that the early strengths are developed by the tricalcium silicate, while at later periods the dicalcium silicate, which hydrates at a much slower rate, adds considerably to the cementitious qualities. At the same time it appears that the 'fluxing materials,' such as the alumina, iron, etc., should be present in a certain definite amount, above or below which the strengths are reduced at all periods. The high-silica cements in order to develop the same cementitious qualities as the low-silica ones must have less of the 'fluxing materials' present.

Cement Without Alumina

Since it was found that compounds formed by burning 65 to 75 per cent alumina with 35 to 25 per cent of lime in a rotary kiln, when ground, gave hydraulic cements of very high strength at early periods, it was decided to conduct an investigation for the purpose of making cement of silica and lime only. Preliminary work on a small scale showed the im-

possibility of combining these two materials at the temperature of the rotary kiln, without the aid of some fluxing material. It was then found that boracic acid and calcium fluoride were very desirable and useful fluxes. With the aid of these a number of cements have been burned, not containing alumina, and with a line content of approximately 70 per cent. There was no difficulty in producing them in a rotary kiln. Their commercial use would be small, on account of their very slow time of setting; they are of great interest, however, in helping to elucidate the behavior of the compounds present in Portland cement."

Rock Products Producers Discuss Policies with Industrial Leaders

Atlantic City Meeting of War Service Committee Great Congress of Business Men

TO TAKE PART in conferences, to have a hand in the formation of national policies which may have an enormous influence upon American business, was the satisfaction derived by rock product producers from the Atlantic City War Emergency and Reconstruction Congress of the war service committees of American industries. For the first time in history perhaps quarry men and gravel producers rubbed elbows with steel and iron magnates, coal and oil barons and other great captains of industry, and sat with them as business equals and associates to discuss problems common to all.

It was the trade association principle of co-operation carried to its greatest height, and the convention could not but impress all who attended it with the value of trade association work. It may even mark the beginning of an era when we shall have government regulations of industry by business men as well as by lawyers, professors and politicians.

How the Congress Was Conducted

The first day of the convention was given over to individual meetings of the 360-odd war service committees. On the next day these war service committees and related national associations met in 35 related group meetings, at which addresses were made and resolutions adopted.

From the related group meetings the next step was to 10 major group meetings, at which more addresses were made and the resolutions of the related group meetings were approved or disapproved. From these major group meetings the adopted resolutions went to the clearance committee of the convention, which passed on them and then presented appropriate ones at the final session of the congress for action.

The group meetings were interspered with general meetings of the whole congress, at which notable men made addresses. Among these speakers were Charles M. Schwab, of the Bethelehem Steel Corporation; William C. Redfield, secretary of commerce; James A. Farrell, of the United States Steel Corporation; John D. Rockefeller, Jr., and Harry A. Wheeler, president of the Chamber of Commerce of the United States.

The congress adopted 32 resolutions which the clearance committee selected as representing the consensus of the three hundred or more presented to it. These resolutions covered the policy of the convention as to (1) cancellation of Government war contracts; (2) sale of surplus Government supplies; (3) removal of restrictions on industry; (4) protection of pivotal industries; (5) industrial co-operation; (6) development of the work of the Federal Trade Commission; (7) labor, or industrial relations; (8) relocation of labor; (9) stimulation of public works; (10) reduction of Federal taxes; (11) allowance in stock inventories for present inflated values; (12) return of the railways to private owners; (13) opposition to Government ownership of telephone and telegraph lines; (14) development of an American merchant marine; (15) development of port facilities; (16) encouragement of public utilities; (17) development of water powers; (18) sharing our resources for reconstruction in Europe; (19) appointment of a commission of American business men to go to Europe to study European needs; (20) development of foreign trade; (21) particularly in South America; (22) protection of property rights in Mexico; (23) education of young men in foreign commerce; (24) development of U. S. Forest Laboratory service; (25) recommendation of uniform cost accounting for each industry; (26) council and executive committee composed of the chairmen of the present war service committees, to co-relate the various industries in future actvities; (27) endorsement of national trade associations and others of only temporary interest.

The convention went on record against Government ownership of railways, telegraph and telephone lines. The unanimous sentiment of the convention was for the repeal or radical modification of the Sherman anti-trust law. It endorsed the so-called "Rockefeller creed" for handling labor, which reads as follows:

1. Labor and capital are partners, not enemies; their interests are common interests, not opposed, and neither can attain the fullest measure of prosperity at the expense of the other, but only in association with the other.

2. The purpose of industry is quite as much to advance social well-being as material well-being and in the pursuit of that purpose the interests of the community should be carefully considered, the well-being of the employes as respects living and working conditions should be fully guarded, management should be adequately recognized and capital should be justly compensated, and failure in any of these particulars means loss to all.

3. Every man is entitled to an opportunity to earn a living, to fair wages, to reasonable hours of work and proper working conditions, to a decent home, to the opportunity to play, to learn, to worship, and to love, as well as to toil, and the responsibility rests as heavily upon industry as upon government or society to see that these conditions and opportunities prevail.

4. Industry, efficiency, and initiative, wherever found, should be encouraged and adequately rewarded and indolence, indifference, and restriction of production should be discountenanced.

5. The provision of adequate means for uncovering grievances, and promptly adjusting them, is of fundamental importance to the successful conduct of industry.

6. The most potent measure in bringing about industrial harmony and prosperity is adequate representation of the parties in interest; existing forms of representation should be carefully studied and availed of in so far as they may be found to have merit and are adaptable to the peculiar conditions in the various industries.

7. The application of right principles never fails to effect right relations; the letter killeth and the spirit maketh alive; forms are wholly secondary while attitude and spirit are all important, and only as the parties in industry are animated by the spirit of fair play, justice to all, and brotherhood, will any plans which they may mutually work out succeed.

8. That man renders the greatest social service who so co-operates in the organization of industry as to afford to the largest number of men the greatest opportunity for self-development and the enjoyment by every man of those benefits which his own work adds to the wealth of civilization.

Highway Resolution Fails

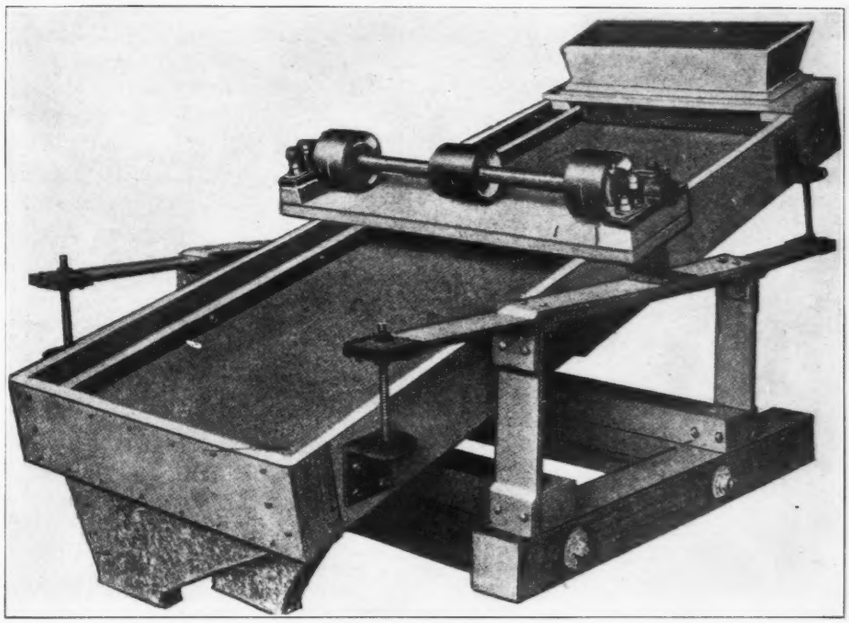
The spirit of most of the resolutions adopted by the rock products group meetings were incorporated in the thirty-odd resolutions endorsed by the convention as a whole. Notable exceptions were a resolution originating with the Highway Industries Association asking for the appointment of a Federal Highway Commission and a resolution condemning the present high freight rates on bulk commodities like stone and gravel.

NEW MACHINERY AND EQUIPMENT

New Types of Screens

FOR fine screening, that is for screening materials from 10 to 250-mesh per square inch, the Hendrie & Bolthoff Manufacturing and Supply Company, Denver, Colo., has just placed on the market a new vibrating screen. The Allen screen, as it is called, is simple in construction, has no ratchets, cams or hammers. The vibrations are imparted to the screen by its being mounted on flexible supports in conjunction with a revolving shaft to which adjustable counterbalances are fastened. This simple device causes the screen to vibrate vertically, as well as horizontally, imparting rapid progression in the direction of the discharge end for rejected material.

The machine is claimed to be practically noiseless and dustless in operation, requiring little power or attention, and it is claimed to have large capacity per square foot of screen area. The screen is made in three standard sizes from 18 to 36 in. wide and weighs from 300 to 425 lbs. The pulley speed is 1200 r.p.m. for the small size and 900 r.p.m. for the large size. The list prices range from $200 to $425.

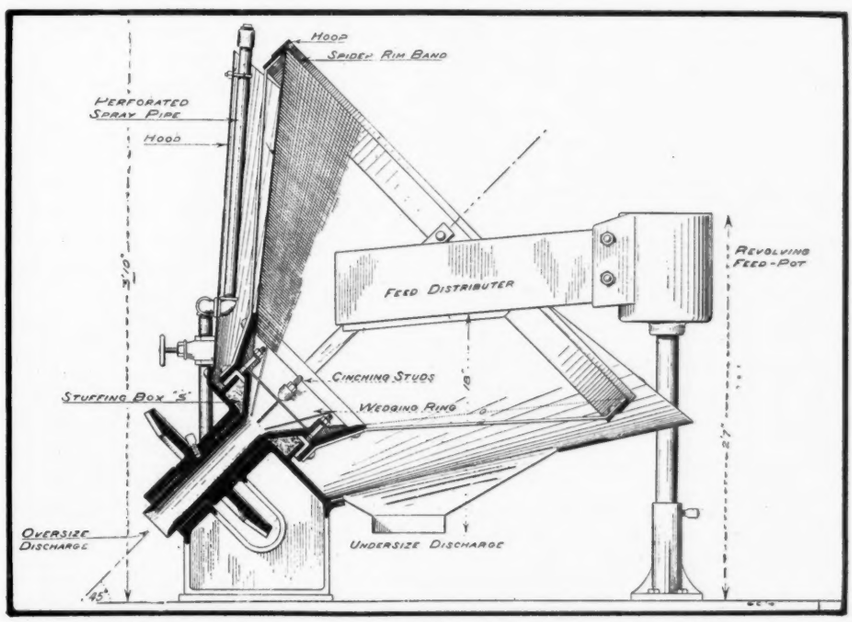


New screen that vibrates vertically and horizontally

Conical Concentrator Screens

Another type of screen made by the same manufacturer has been used considerably in ore treatment, but is adaptable for separating sand sizes as well. The claims made for this screen are as follows: That it will mechanically separate slime and fine material from the coarser sand to be saved and that it has a wide range—can be used with the finest wire cloth and with coarser than 6-mesh if desired.

This screen, called the "Bunker Hill," consists of a conical screen mounted on a wrought-iron spider with a hollow shaft set at an angle of 45 deg. The spider is supported by a simple cast-iron base, and is driven by bevel gearing and tight and loose pulleys. A conical sheet-iron housing surrounds the revolving screen, and the bottom of the housing is hopper-shaped and serves for the discharge of the fine material.



Conical screen that has a wide range fine to coarse separations

Operation

The feed is distributed by means of a long sheet-iron feed box, along a meridian line of the cone and across the descending portion of the screen. The discharge of the feed box is regulated by means of a sliding gate.

The feed falls on the screen almost tangentially to its surface, and, as it touches the screen cloth, a classification of the material immediately takes place; the larger bulk of slime and fine particles immediately passes through, while the balance of the feed, containing the coarser particles, slides over the screen cloth. The separation of fine and coarse material on the surface of the screen itself is in great part responsible for the high efficiency of the machine. The coarse particles remain distributed over the screen cloth in a thin uniform layer, and are elevated on the ascending portion of the screen, clinging to it by adhesion and by centrifugal force, until, at a certain point, partially by gravity and partially by action of a spray of water, the oversize rolls off towards the vortex of the cone, where it discharges through the hollow spider-shaft. As the oversize rolls over the screen surface, the last fine

particles retained in the oversize are washed through.

Power and Capacity

A one-inch belt is sufficient to drive the screen, the power required being less than one-twentieth of a horse-power. The speed of the screen depends on the volume and coarseness of the feed, but 20 r.p.m. answers in practically all cases. The line shaft must be placed almost vertically over the driving gear, and by using step-pulleys, it is possible to vary the speed of the screen from 18 to 22 r.p.m. The belt pulley which is 12 in. in diameter, should run at 80 r.p.m. in order to give a screen speed of 20 r.p.m.

The capacity—the amount of feed handled in tons per 24 hours—is rated as follows:

Mesh	Working Load
6	150 tons
16	100 tons
22	55 tons
30	40 tons
Finer than 30-mesh	Up to 30 tons

Recent Developments in Fine Grinding

ABOUT TEN YEARS ago users of pulverizing machinery became interested in several high-speed grinders which were claimed more efficient as finishers than flint pebble tube mills then in very general and satisfactory use for that purpose. While it is generally admitted that flint pebble tube mills as then built are superior, as fine grinders, to any high-speed machines then and now obtainable, the small, wear-resisting metallic grinding medium "Ball-Pebs" since introduced has greatly increased its efficiency.

To obtain in full measure the advantage of this improvement required carrying the grinding charge as heretofore, at about the center of the mill. This increased the weight of charge 2½ times. Allis-Chalmers engineers, quick to recognize the importance of this improvement, were the first to develop and manufacture the "Ball-Peb Mill" with parts adequately designed to take full advantage of this advance in grinding practice. This still left the problem of adapting existing mills to the use of Ball-Pebs.

(a) Many operators simply substituted for the flint pebbles an amount of Ball-Pebs which would not overstrain the mill or its driving connections. In time, as a further improvement, ribbed liners were substituted for silex or smooth iron liners previously in use with flint pebbles.

(b) In some cases mills were reconstructed to carry the heavier loads. While this is satisfactory in operation, the first cost is necessarily high.

(c) Another alternative is to reduce the inside diameter of mill to such size that when charged to the center the mill and its driving connection are not overstrained. The principal objection to this method is the recognized lesser efficiency of smaller diameter mills.

(d) Another alternative is the use of division heads to blank the center of mill and carry the Ball-Pebs to near the center in two ends. This method also gives satisfactory results, but necessarily introduces additional wear on the two division heads.

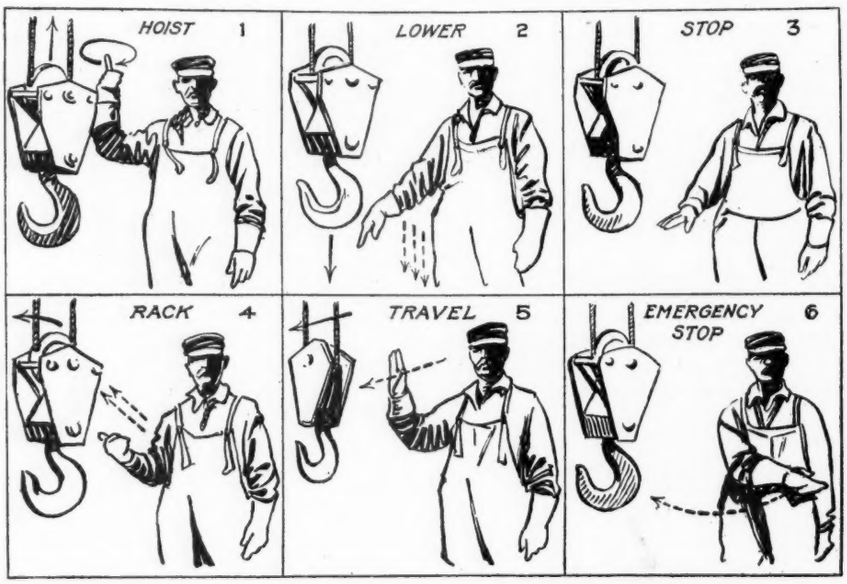
Until recently small spheres, cylinders, nut and boiler punchings have been the most common forms of metallic grinding bodies. Efforts have been made to improve upon these by studying and experimenting with special shapes.

Laboratory experiments showed that boiler punchings of much greater diameter than thickness ground more efficiently than spheres or ordinary cylinders from feed 75 per cent through 200 mesh to discharge 80 per cent through 200 mesh; but, for grinding from minus 20 or minus 30 mesh, spheres, because of their greater weight, rolling and pounding action, were more efficient than cylinders or boiler punchings which have principally a sliding action. The first experiment showed the necessity of area of contact and the latter that for customary grinding, rolling and pounding is necessary to reduce the larger particles.

An entirely new article, the "Concavex," resulted from the effort to combine in one body these two very essential features. As its name implies, it has both concave and convex surfaces, the preferred shape of manufacture being a sphere with two sides cupped, forming concave surfaces with radius about the same as the sphere.

"Concavex" are made in various diameters, size of feed and desired fineness of product determining the diameter to be used. In cement mill practice the 1¼ in. concavex are the best substitute for the ⅞ in. ball-pebs. The very large contact area, due to their shape, gives them great efficiency. Their peculiar shape tends to eliminate shrinkage strains, thus permitting the use of much harder mixture without sacrificing strength.

Of greatest importance to users of flint pebble tube mills, is that with "Concavex" the expensive reconstruction necessary to use metallic grinding bodies efficiently in such mills is eliminated. On account of their interlocking shape their angle of repose is greater; consequently, a low charge is carried higher in the mill, and therefore attains the rolling action found in mills charged to the center line, and without over-straining the mill or its driving connections, thus offering a means heretofore unavailable to convert such mills to more efficient grinders at reasonable first cost.



Uniform Crane Signals

THE Industrial Board of the Pennsylvania Department of Labor and Industry has adopted, among other safety standards, uniform crane signals. The same signals are illustrated in the accompanying cut.

1. Hoist—Forearm vertical. Make small horizonzal circles with the hand.

2. Lower—Arm extended, hand below hip, wave forearm downward.

3. Stop—Arm extended, hand level with hip. Hold position rigidly.

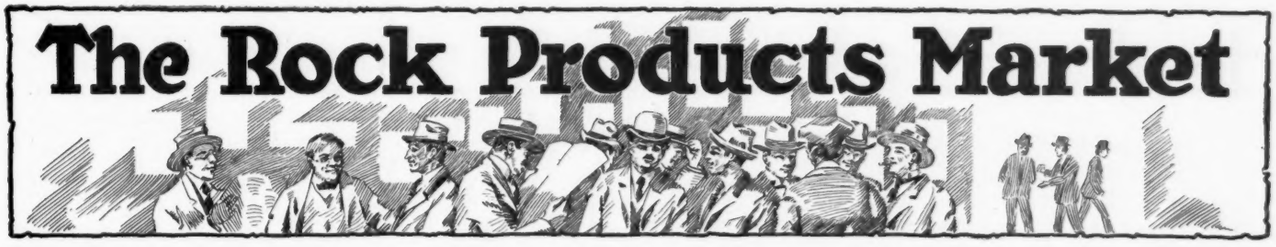
4. Rack—Arm extended, hand just above hip, fingers closed, thumb extended horizontally, jerk hand in direction of racking.

5. Travel—Forearm vertical, hand open. Wave forearm in direction of travel.

6. Emergency Stop — Arm extended, hand level with the hip. Move hand quickly to right and left.

The signals should be posted in all crane cages and should be observed only when they are given by the proper person.

The Rock Products Market



Agricultural Limestone Wholesale at Plant, per Ton

EASTERN:

Coldwater, near Rochester, N. Y.—(80% thru 100 mesh) Analysis, $CaCo_3$, 56.77%; $MgCo_3$, 41.74%.... 2.25@2.65

Danbury, Conn.—(50% thru 100) Analysis, $CaCo_3$, 96%; $MgCo_3$, 2%; ppr., $4.00; bulk..... 2.75

Hillsville, Pa.—(90% thru 100 mesh) in 80 lb. ppr. bags, $4.50; bulk..... 3.00

Jamestown, N. Y.—(90% thru 100 mesh)—Bags 2.50

Pownal, Vt. (50% thru 100) Analysis, $CaCo_3$, 96%; $MgCo_3$, 2%; ppr., $4.00; bulk 2.75

Walford, Pa.—(70% thru 100 mesh; 90% thru 50 mesh; 50% thru 50 mesh; 100% thru 10 mesh; 50% thru 4 mesh), paper sacked..... 5.00
Bulk 3.00

West Stockbridge, Mass. — (50% thru 100) Analysis, $CaCo_3$, 96%; $MgCo_3$, 2%; ppr., $4.00; bulk..... 2.75

CENTRAL:

Alton, Ill.—(Pulv. and 90% thru 50 mesh; 90% thru 4 mesh) Analysis, $CaCo_3$, 96%; $MgCo_3$, 75%..... 2.00

Bedford, Ind.—(90% thru 10 mesh) Analysis, $CaCo_3$, 98.5%; $MgCo_3$, 0.5% 1.75

Columbia, Ill., near East St. Louis —(⅛" down) ..... 1.25@1.80

Elmhurst, Ill. — Analysis, $CaCo_3$, 29.43%; $MgCo_3$, 20.69%..... 1.00

Greencastle, Ind. — (50% thru 50 mesh) Analysis $CaCo_3$, 98%..... 1.75

Lannon, Wis.—(50% thru 50 mesh) Analysis, 53.35%, $CaCo_3$; 43.27% $MgCo_3$ 2.00

Marble Cliff, O.—(50% thru 100 mesh) Analysis, $CaCo_3$, 86%; $MgCo_3$, 8%..... 3.00

Marblehead, O.—(50% thru 100 mesh; 60% thru 50 mesh; 100% thru 10 mesh)—Analysis (Min.), $CaCo_3$, 32.03%; $MgCo_3$ 3.75%. Bulk, $3.00; ppr. 80 lb. sack..... 4.50

McCook, Ill.—(90% thru 4 mesh)... .75@1.00

McCook, Ill.—(100% thru ¼" sieve; 78:12% thru No. 10; 53:29% thru No. 20; 33:14% thru No. 30; 26:04% thru No. 50; 16:27% thru No. 100) Analysis, $CaCo_3$, 54.10%; $MgCo_3$, 45.04%..... 1.00@1.25

Milltown, Ind.—Analysis, $CaCo_3$, 98% 1.50

Montrose, Ia.—(90% thru 100 mesh) 1.25@1.50

Muskegon, Mich.—(50% thru 50 mesh) Analysis, $CaCo_3$, 53.35%; $MgCo_3$, 43.27%..... 1.50@2.00

North Industry, O.—(50% thru 100 mesh; and pulverized limestone) Analysis, $CaCo_3$, 91%; $MgCo_3$, 1.63% 3.00

Piqua, O.—(70% thru 100 mesh).... 2.50@4.00

Rockford, Ill.—Analysis, $CaCo_3$, 53.75%; $MgCo_3$, 44.35%..... 1.25

Stolle, Ill. (near East St. Louis on I. C. R. R.)—(Thru ⅛" mesh) Analysis, $CaCo_3$, 89.61 to 89.91%; $MgCo_3$, 3.82%..... 1.50

Stone City, Ia.—(50% thru 100 mesh) .50

Whitehill, Ill.—(50% thru 50 mesh), Analysis, $CaCo_3$; 96.12%; $MgCo_3$, 2.50% ..... 1.25@1.50

SOUTHERN:

Brooksville, Fla.—Pulverized limestone 1.80

Cartersville, Ga.—(50% thru 100 mesh) Analysis, combined carbonates, 96%..... 3.50

Fletcher, N. C.—(100% thru 10 mesh) Analysis, $CaCo_3$, 90%; $MgCo_3$, 80%. Paper, $3.75; bulk.. 2.25

Irvington, Ky.—(50% thru 4 mesh). 1.90

(Continued on next page.)

Wholesale Prices of Crushed Stone

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

Crushed Limestone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
EASTERN:						
Auburn and Syracuse, N. Y..	.80	1.20	1.20	1.20	1.20	1.20
			R. R. ballast 1.00			
Buffalo, N. Y.	1.00, all sizes from bins.			1.25, all sizes from stock piles.		
Burlington, Vt.	.....	.....	2.50	2.00	1.75	.....
Coldwater, nr. Rochester, N. Y.			Flux, 1.50@2.10		(local)	
Grove, Md.	.....	.....	2.25	2.05	1.65	1.50
Hagerstown, Md.			$2.00 for all sizes			
North Leroy and Akron, N. Y.	$1.00 for all sizes, including R. R. ballast					
Quarryville, Pa.	.....	.....	.....	2.00	(local trade only)	
Walford, Pa.	1.25	1.50	1.50	1.50	1.50	1.50
CENTRAL:						
Alden, Ia.	.20	.....	1.00	1.00	.....	.....
Alton, Ill.	1.85	.....	1.45	1.35	.....	.....
Columbia, Ill. (near E. St. L.)	1.25@1.80	.85@1.20	.95@1.30	.95@1.30	.80@1.20	.....
Detroit, Mich.	Various sizes $1.50 per net ton					
Dundas, Ont.	.65	1.10	1.10	1.10	.90	.90
Eden and Brillion, Wis.	.80@1.00	Other sizes 1.00 per ton				
Elmhurst, Ill.	1.00	1.00	1.00	1.00	1.00	.90@1.00
Ft. Wayne, Ind.	Various sizes $1.60 per net ton					
Hull, Canada	1.20	1.20	1.20	1.05	.80	.....
Greencastle, Ind.	1.00@1.25	1.10	1.00	.90@ .95	.90	.90
Illinois, Southern	1.50	1.25	1.25	1.25	1.25	1.10
Lannon, Wis.			1.00 all sizes			
Lima, Ohio	1.00		1.10 for all other sizes			
Linwood, Scott Co., Ia.	.50	.....	1.13	1.05	1.13	.....
Mankato, Minn.	.....	.....	.....	1.25	1.00	.....
Mayville, Wis.	.75	.75	.75	1.10	1.10	1.10
McCook, Ill.	$1.00@1.25	1.50@1.65	90@1.10	70@ .90	70@ .85	70@ .85
Oshkosh, Wis.			1.00 in all sizes, Blue Limestone			
Ottawa, Can.	1.90	2.00	2.00	1.75	1.50	.....
River Rouge, Mich.	.90@1.00	1.25	1.25	1.25	1.25	1.25
Rockford, Ill.	1.25	.....	.....	1.25	1.25	1.25
Sheboygan, Wis.			.80@1.00 for all sizes			
Sherman and Hamilton, Wis.			All sizes 1.00 per ton			
Stone City, Ia.	.50	(1-inch 1.20)		1.10	1.00	.....
Toledo, Ohio	.60@1.00	.90@1.10	.90@1.10	.90@1.10	.90@1.00	.90@1.00
Toronto, Can.	1.55	2.00	2.00	2.00	1.80	1.80
			Includes 90c per ton freight			
SOUTHERN:						
Brookville, Fla.	.....	.....	.....	2.50	.....	.....
Fort Springs, W. Va.	.50	1.60	1.60	1.45	1.40	1.10
			Railway ballast 1.10 per cu. yd.			
Irvington, Ky.	.75	.....	.....	.90	.90	.....
Ladds, Ga.	.....	2.40	2.30	2.20	2.10	.....
Mascot, Tenn.	.....	.75	.....	.....	.....	.....
Stephensburg, Ky.			1.20 any size			
Winnfield, La.	1.20	1.80	1.80	1.80	1.80	1.80
WESTERN:						
Atchison, Kans.	.50	1.50	1.50	1.50	1.40	1.40
			Rip-Rap @ 1.00			
Blue Sprgs. & Wymore, Neb.			(Florence flint imbedded in limestone)			
	.15	1.35	1.35	1.25	1.15	1.10
Carthage, Mo.	1.50	1.50	1.25	1.25	1.25	1.25
El Paso, Tex.			.90 for all sizes			
Kansas City, Mo.	.60	1.35	1.35	1.35	1.35	1.35

Crushed Trap Rock

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Baltimore, Md. (vicinity)—	1.25	3.15	2.75	2.50	2.40	.....
Birdsboro, Pa.	1.25	1.75	1.50	1.25	1.25	1.25
Branford, Conn.—Trap	1.00	1.40	1.40	1.35	1.25	.....
Duluth, Minn.—Trap	.65@ .75	1.35@1.50	1.25@1.35	1.15@1.25	1.15@1.25	.....
Glen Mills and Rock Hill, Pa. —Trap	1.10	1.40	1.80	1.60	1.60	1.40
			R. R. ballast 1.40			
Little Rock, Ark.—Trap	.....	1.75	.....	1.75	1.50	1.35a
Millington, N. J.	1.75	1.85	1.75	1.75	1.60	.....
Montrose, Ia.—Trap	.....	1.10@1.20	1.10@1.25	1.05@1.10	1.00@1.10	.....
Morristown, N. J.—Trap	1.85	1.75	1.75	1.60	1.40	1.40
New Britain, Conn.	.75	1.30	1.25	1.20	1.00	.....
North Branford, Conn.—Trap.	.80	1.30	1.25	1.20	1.10	.....
Richmond, Cal.—Trap	.....	.....	1.75	1.65	1.65	.....
Westfield, Mass.—Trap	.60	1.00	1.10	1.00	.90	.....

Miscellaneous Crushed Stone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Brooksville, Fla.—Flint	1.00	.....	.....	2.25	.....	.....
Fair Oaks, Calif.—Cr. Bldrs..	.85	1.05	.95	.85	.85	.....
Hendlers, Pa.—Quartzite	.75	1.00	1.35	1.25	1.00	1.00‖
Little Falls, N. Y.—Syenite..	.60	Other sizes 1.00, including R. R. ballast				
Richmond, Va.—Granite	1.75	1.75	.....	1.75	1.50	1.50
Stephensburg, Ky.	1.26 per cu. yd. any size Basalt and other kinds					
Stockbridge, Ga.—Granite....	.50	2.50	2.50	2.25	2.25	2.00
Toledo, O.—Slag	.75@1.25	.85@1.40	.85@1.40	.85@1.40	.85@1.25	.85@1.25

*Cubic yard. †Agri. lime. ‖R. R. ballast. §Flux. ‡Rip-rap. a 3-inch and less.

Agricultural Limestone Wholesale at Plant per Ton

(Continued from preceding page.)

Keystone, Ala.—(90% thru 50 mesh) Analysis, $CaCo_3$, 99.50%; $MgCo_3$, none	1.25
Mascot, Tenn.—(90% thru 50 mesh) Analysis, $CaCo_3$, 52%; $MgCo_3$, 38%	1.50@2.00
Stephensburg, Ky.—Analysis, $CaCo_3$, 98%	1.20
Winnfield, La.—(50% thru 50 mesh)	3.00
WESTERN	
Cement, Cal.—(50% thru 100 mesh)	4.00
Elsberry, Mo.—(Pulverized) Analysis,, $CaCo_3$, 99.29%	1.85@1.95
Fresno, Cal.—(All thru 40 mesh) Analysis, $CaCo_3$, 98%; $MgCo_3$, 1%. (50% and 40% thru 200 mesh) sacked, $5.50; bulk, $5.00. (100% thru 40 mesh) sacked, $5.25; bulk	4.75
Bulk	1.50
Kansas City, Mo.—(50% thru 100 mesh)	1.50

Current Wholesale Prices in New York

CURRENT wholesale prices, prevailing on the Building Material Exchange and elsewhere in the Metropolitan district in New York, are given as below in the

(Continued on page 43.)

Miscellaneous Sands per Ton at Plant

Silica sand is quoted washed, dried and screened, unless otherwise stated.

GLASS SAND:	
Bowmanstown, Pa.—Glass sand	2.50
Cedarville, N. J.—Glass	1.50@4.00
Hellam, Pa.—Glass	2.00
Daguscahonda, Pa.—Glass	2.75
Dundee, Ohio—Glass	2.00@2.25
Gray's Summit, Mo.—Glass	2.00@2.50
Kermit, Va.—Glass sand:	
Washed	2.25@2.75
Crushed	1.75@2.00
No. 2	1.00@1.25
Mapleton, Pa.—Glass, damp	3.00
Glass, dry	3.50
Massillon, Ohio—Glass	2.00
Michigan City, Ind.—Glass sand	.30@ 40
Mineral Ridge, O.—Glass	1.75@2.75
Montreal, Can.—Glass	4.50
Montoursville, Pa.—Glass	1.25@2.00
Oregon and Wedron, Ill.—Glass	2.00@2.50
Ottawa, Ill.—Silica	2.00@2.50
Sands, Elk Co., Pa.—Glass sand:	
Washed, wet	2.50
Selected, green	2.50
Silica and Pacific, Mo.—Glass	2.00@2.50
St. Mary's, Pa.—Glass sand—Green, $2.50; washed	3.00
South Vineland and Cedarville, N. J.—Glass	2.00
Sugar Grove, Ohio—Glass	2.00@2.25
Thayer, W. Va.—Glass	2.50@3.00
FOUNDRY SAND:	
Albany District, N. Y.—Molding	2.00@2.50
Allentown, Pa.—Moulding	1.40@1.50
Bowmanstown, Pa.—Molding	1.50
Cleveland, O.—Moulding	1.25@1.75
Cleveland, O.—Core, at pit	.33@ .75
Fleetwood, Pa.—Silica heating	2.15
Kansas City, Mo.—Core	1.00
Mapleton, Pa.—Molding, damp	3.00
Molding, dry	3.50
Michigan City, Ind.—Core	.30@ .40
New Lexington, Stamden and Layland, Ohio—Moulding	2.00@2.25
Ohio—Various points:	
Fine molding	2.00@2.25
Coarse molding	1.75@2.00
Shipments between Nov. 1 and April 1, 75c per ton added.	
Utica, Ill.—Molding	.75@1.00
West Albany, N. Y.—Molding	2.25@5.00
Zanesville, O.—Moulding	2.00@2.25

Wholesale Prices of Sand and Gravel

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

Washed Sand and Gravel

City or shipping point	Fine sand, 1/10 inch down	Sand, ¼ inch and less	Gravel, ½ inch and less	Gravel, 1 inch and less	Gravel, 1½ inch and less	Gravel, 2 inch and less
EASTERN:						
Bowmanstown, Pa.	.....	1.20	1.10	.....	.....	.....
Buffalo, N. Y.	1.25 cu. yd., all sizes					
Buffalo, N. Y. (Niagara River)	1.00	.85	.80	.80	.80	.80
Libby's Pit, Leeds Junct, Me.	1.00	.50@ .60	1.50	.....	1.35	1.25
Morristown, N. J.	.....	.50@ .55	.95@1.00	.95@1.00	.95@1.00	.....
No. Wilbraham, Mass.	.....	.50*	1.75*	.....	1.20*	1.05*
Pittsburgh, and McKeesport, Pa.	.....	1.25@1.50	.....	.....	1.05	1.05
Washington, D. C.	.75	.75	2.00	1.70	1.40	1.20
Washington, D. C.—Wharves.	.....	.75	2.00	1.40	1.20	1.20
CENTRAL:						
Algonquin, Ill.	All grades .50 per cu. yd. (3,000 lbs.)					
Barton, Wis.	.75	.70	1.00	.70	.70	.70
Beloit, Wis.	.40	.40	.50	.40	.40	.40
Chicago, Ill.	.....	.95@1.05	.....	.....	.95@1.05	.....
Cincinnati, Ohio	.40@ .50	.40@ .50	.40@ .50	.50@ .60	.50@ .60	.50@ .60
Columbus, O.	.....	.60	.50	.60	.60	.60
Des Moines, Ia.	40@ .75	.50	1.25@1.50	1.25@1.50	1.00@1.25	1.00@1.25
Des Moines, Ia.	.30@ .40	.30@ .40	.....	.....	1.00@1.25	1.00@1.25
Elgin, Ill.	.....	.50	.50	.50	50	.50
Escanaba, Mich.	1.00	1.00	1.20	1.20	1.00	1.00
Hawarden, Ia.	.40@ .60	.40@ .60	.....	.95@1.25	.....	.85@1.00
Greenville and Mechanicsburg, O.	.50	.50	.60	.60	.60	.60
Illinois, Northern	.60@ .70	.60@ .70	.70@ .80	.60@ .70	.60@ .70	.50@ .60
Indianapolis, Ind.	.50	.50	.....	.65	.65	.65
Janesville, Wis.	.....	.50@ .75	.....	.....	.50@ .75	.....
Kalamazoo, Mich.	.50@ 60	.50@ 60	.50@ .70	.60@ .80	.60@ .80	.60@ .80
Mason City, Ia.	.60	.50	1.10@1.20	1.20	1.00@1.20	1.00@1.20
	Railway ballast and road work, .40					
Milford, Ind.	.....	.60	.....	.....	.70	.....
Milwaukee, Wis.	1.06 for all sizes					
Minneapolis, Minn.	.50* 2800 lbs.	.50* 2800 lbs.	1.25* 2600 lbs.	1.20* 2600 lbs.	1.15* 2600 lbs.	1.10* 2600 lbs.
Moline, Ill.	.....	1.00 yd. strge.		.....	.....	.....
Montezuma, Covington, Ind.	.75	.75	.75@ .85	.75	.75	.75
Niles, Mich.	.....	.50@ .80	.60@ .85	.50@ .80	.50@ .80	.50@ .80
Sabula, Ia.	.40@ .60	.40@ .60	1.00	1.00	1.00	1.00
Saginaw, Mich.	.95	.95	1.85	1.85	1.60	1.60
St. Paul, Minn.	.65*	.65*	1.75*	1.25	1.15*	1.15*
Terre Haute, Ind.	.75	.75	.75@ .85	.75	.75	.75
Wabash Valley District, Ind.	All sizes, .75.					
Winona, Minn.	.60@ .90	.60@ .90	1.00@1.40	1.00@1.40	.95@1.25	.95@1.25
SOUTHERN:						
Charleston, W. Va. (River)	1.20	1.20	1.30	1.30	1.30	1.30
Lake Weir, Fla.	.....	.50	.....	.....	.....	.....
Knoxville, Tenn.	.85@ .90	.85@ .90	1.00@1.50	1.00@1.50	.95@1.40	.95@1.40
New Orleans, La.	1.70*	(2500 lbs.)	2.50*	(2700 lbs.)	.....	.....
Pelzer, S. C.	All sizes, .55 per net ton					
Valde Rouge, La.	.....	.75*@1.00*	2.10*	2.00*	1.50*	1.25*
Waco, Tex.	.75	.75	1.20	1.20	1.00	1.00
WESTERN:						
Joplin, Mo.	1.00	.60	.45	1.50	1.25	2.00
Kansas City, Mo.	Car lots, building sand, @ .60; retail truck 1.50*					
Lincoln, Neb.—(Pit)	.55	.55	1.50	1.50	1.50	1.40
Pueblo, Colo.	.80*	.60*	.....	.....	1.50*	.....
Roche Spur, Tulare Co., Cal.	.35 River sand ¼ inch					
San Francisco, Cal.	1.15 for all grades gravel.					
Seattle, Wash.	1.25*	1.25*	2.00*	1.25*	1.25*	1.25*
Vancouver, B. C. (Scows)	.....	1.45*	1.70*	1.65*	1.65*	1.45*

Bank Run Sand and Gravel

City or shipping point	Fine sand, 1/10 inch down	Sand, ¼ inch and less	Gravel, ½ inch and less	Gravel, 1 inch and less	Gravel 1½ inch and less	Gravel, 2 inch and less
EASTERN:						
Attica, N. Y.	.50	.50	.60	.60	.60	.60
Boonville, N. Y.	.45@ 60	.40@ 60	.....	.....	.....	.60
Burnside, Sand Pit, Conn.	All sand, .80 cu. yd.					
Lowell Junction, Mass.	.....	.50*@ .75*	.....	.....	.....	1.25*
Pittsford, N. Y.	.....	.50	.....	.....	.....	.....
Yardville, N. J.	.....	.50 @ .75	.....	.....	.....	.....
York, Pa.	.....	1.00@1.25	(crushed rock)		.....	.....
CENTRAL:						
Cleveland O.	1.00@1.75 bank sand					
Covington, Ind.	.....	.....	.....	.....	.60	.60
Des Moines, Ia.	Concrete mix washed at .60 per ton					
Escanaba, Mich.	.....	.....	.....	.....	.....	.85
Indianapolis, Ind.	Concrete mix .55					
Janesville, Wis.	.....	.....	.....	.....	.50@ .75	.....
Milford, Ind.	.....	.....	.....	.....	.50	.....
Moline, Ill.	.....	.....	.....	.....	1.00 yd. stge.	
Portsmouth, Ohio	.....	.65	.....	.85	.....	.....
Sabula, Ia.	.....	.....	.....	.....	.....	.50@ .70
Saginaw, Mich.—(River dock)	.50	.....	1.20	1.20	.....	.....
Terre Haute, Montezuma, Ind.	.50@ .60	.....	.....	.....	.60	.50@ .60
Toledo, O.	.....	.....	.....	.....	.....	.55@1.00
Wabash Valley District, Ind.	.75 for all sizes					
Winona, Minn.	Pit run gravel under 2-in., .60@.90					
SOUTHERN:						
Howcott, La.	.....	.....	.....	.....	.....	.65
Joplin, Mo.	.75	.60	.40	.....	.....	.....
Knoxville, Tenn.	.85@ .90	.....	.....	.....	.....	.....
Lindsay, Tex.	.....	.....	.44	.44	.....	.....
Memphis, Tenn.	.65@ .90	.65@ .90	.....	.....	.85@1.10	.85@1.10
Valde Rouge, La.	Sand and gravel mixed for concrete, .85@1.10					
WESTERN:	Gravel 60% metal on ⅛" screen, .60 per ton					
Pueblo, Colo.	River Run .60 unscreened					
Vancouver, B. C.	.....	.85@1.10	.....	1.00@1.25	.....	.85@1.00

* Cubic yard. B Bank. L Lake. ‖ Ballast.

Current Wholesale Prices in New York

(Continued from page 42.)

Record and Guide. Allowances must be made for yard and store prices:

Cement (wholesale, 1,000 bbls. lot and over, alongside dock, N. Y.)

Domestic Portland, spot.....$3.20@——
Rebate on bags, returned, 25c a bag.
Rosendale Natural to dealers, wood or duck bags.....—@——
Rebate on bags, returned, 10c bag.

Gravel (500 cu. yd. lots f. o. b. alongside dock N. Y., wholesale):

1½ in. (nominal).....$2.00@——
Other sizes, no quotations.

Sand—

Screened and washed Cow Bay, 500 cu. yds. lots, wholesale..$1.25@——

Lime (standard 300-lb. bbls.):

Eastern common, wholesale price .....$2.70@——
Eastern finishing, wholesale price .....$2.90@——
Hydrated common (per ton)...16.00@——
Hydrated finishing (per ton)..18.16@——
Rebate for returned bags, $4.00 per ton.

Plaster—(Basic prices to dealers at yard, Manhattan):

Mason's finishing in 100 lbs. bags, per ton.....$23.00@——
Dry Mortar, in bags, returnable at 30c each, per ton.... 14.05@——
Block, 2 in. (solid), per sq. ft.....$0.11
Block, 3 in. (hollow), per sq. ft.... 0.11

Crushed Stone (500 cu. yd. lots, f. o. b. alongside dock N. Y., wholesale):

Trap rock, 1½ in. (nominal)...$1.85..——
Trap rock, ¾ in. (nominal)... 2.00@——
Crushed limestone, 1½ in..... 1.80@ 1.85
Crushed limestone, ¾ in..... 1.90@ 2.00

Building Stone—

Indiana limestone, per cu. ft.....$1.23
Kentucky limestone, per cu. ft..... 1.50
Brier Hill sandstone, per cu. ft..... 1.50
Gray Canyon sandstone, per cu. ft... .95
Buff Wakeman, per cu. ft..... 1.50
Buff Mountain, per cu. ft..... 1.50
North River bluestone, per cu. ft.... 1.05
Seam face granite, per sq. ft..... 1.00
S. Dover marble (promiscuous mill blocks, per cu. ft..... 2.25
White Vermont marble (sawed), New York, per cu. ft..... 3.00

Portland Cement.—The market situation as applied to the cement manufacturing interests is practically unchanged. Government requirements have fallen off materially and the producers are able to manufacture ahead for the needs of the coming year. There recently has been a slight tendency toward improvement in the volume of business emanating from private building sources, and there is considerable hope for the coming months. Portland cement prices are firm and unchanged, and at the present there is little likelihood of any movement in either direction from the current level.

Hydrated Lime.—The market is quiet with demand dull, but there are fair indications of an improved situation within a short time. Dealers are looking forward to greatly increased volume of business during the coming spring and summer months.

Lime.—Although the lime manufacturers are generally busy the bulk of the business is chemical and agricultural lime, rather than building. The season is too late for a great revival of building this year, and the lime interests do not anticipate a large increase of business from construction work until next spring. Wholesale prices for eastern common and finishing were increased 20c a barrel last week with a discount of 10c a barrel instead of 5c, as heretofore.

Sand and Gravel. — The market has greater freedom than it has had for some time, owing to the drop in the intensity of the Federal requirements. While there is an amount of activity from civil building sources the volume is not great, and no material additional business is expected for the next two or three months or until the building situation has had sufficient time to adjust itself to the new conditions. Prospects for the spring and summer of 1919 are steadily brightening. Prices are firm and unchanged.

Window Glass.—Producers of both plate and window glass are as yet undecided as to their plans for the immediate future, and it is now generally considered unlikely that there will be an early resumption of manufacturing operations.

General Situation. — During the past week new plans have been presented for estimates and quite a number of contracts have been placed for structural projects to be erected in the Metropolitan District.

At the present time one important factor that is operating against an early resumption of structural activity is the labor situation. The building industry seems almost united in its opinion that the forthcoming year will be a period of strikes and lockouts that will cause considerable trouble, and that will prevent the fullest amount of activity for the industry as a whole.

All material interests are confident that with the advent of the spring of 1919 there will be increased business that will keep all concerned at a high pitch.

In general material prices are steady and from all accounts there is no great likelihood of important changes for some time. There have been rumors of slight weakening tendencies in the price situation, but they have not been confirmed by actual announcements of reductions from current levels. On the other hand, some lines are indicating a marked tendency toward higher prices owing to the increased labor and production costs.

Small Demand on Coast but Big Business in Sight

SAN FRANCISCO, Cal.—At present shipments from the plants in this community are less than they have been at any time during the past year. All of the paving work which had been started prior to the action of the War Industries Board, the contractors of which had received permission to finish their jobs, is completed, and there is practically no paving work of any nature whatsoever going on, and very little building.

The only market for rock is for what the railroad companies are using and what Government work there may be at the cantonment at Camp Kearny, the balloon school at Arcadia, and at San Pedro. This does not amount to very much. Of course, there is the regular small business which is always going on.

However, the prospects for an immediate opening of a large market is very good. Four hotels to be started in Los Angeles, will cost $4,000,000. A large paving job at San Pedro is coming up immediately. The estimated cost is $160,000.

The Los Angeles Shipbuilding & Dry Dock Co. is about to start a concrete dry dock. The Second-st tunnel, the Rosehill paving job, together with the paving of First-st, Los Angeles, amount to approximately $1,500,000. This work is to be started immediately.

The county of Los Angeles will let within the next 30 or 60 days, contracts for the improvement of a large number of road improvement districts, which will take a large quantity of material, and it is intimated by railroad officials in Los Angeles that all of the lines in this locality are to do extensive ballasting and other improvements in the near future. All are very much encouraged by the outlook, and the plants are being gripped into shape to take care of the record run of business.

Iron and Steel Prices to Come Down Jan. 1

UNEXPECTEDLY the general committee of iron and steel manufacturers reported to a large meeting of producers in New York, Dec. 9, in favor of a "moderate" reduction in prices of pig iron and all rolling mill products effective Jan. 1, according to "Iron Age." This recommendation was practically indorsed by a unanimous vote of the meeting to put the matter in the committee's hands with power.

As the outcome of the committee's conference with the War Industries Board at Washington today (Wednesday) announcement is looked for of lower prices throughout the list, with the exception of iron ore. It is expected that pig iron will be reduced $3, plates and shapes $5, and sheets and tinplates $10 per ton, with other prices in proportion.

While the War Industries Board has indicated that there will be no Government prices on iron and steel after Dec. 31, it may announce the new schedule as prices which the manufacturers will seek to maintain, as representing a fair readjustment from the war level. On the other hand, the announcement may be made solely by and on behalf of the manufacturers.

Passed By The Screens

Personals

H. P. Radley, manager of the Bloomington-Bedford Stone Co., has been appointed director of the traffic department of the Indiana State Chamber of Commerce. On a recent trip to Washington, D. C., he was successful in getting relief from certain switching rates charged stone producers.

A. P. Sandles, secretary of the National Crushed Stone Association, has been appointed by the United States Treasury Department as Ohio director in the Federal Farm Loan Bank at Louisville, O. He retains his headquarters in Columbus, however.

J. H. Libberton, formerly division engineer, promotion bureau, Universal Portland Cement Co., has been appointed inspecting engineer and engineer of promotion bureau, succeeding Wm. M. Kinney. Mr. Libberton has been with the Universal Portland Cement Co. since August, 1908. Since February, 1917, he has been secretary-treasurer of the American Concrete Pipe Association. He is also a member of the American Concrete Institute, Western Society of Engineers, and the Chicago Engineers' Club.

OBITUARY

Hale Roberts, president and manager of The Hale Roberts Stone Co. of Iowa Falls, Iowa, died December 5.

Allen Kubach, assistant to the sales manager of the Sandusky Cement Co., Cleveland, O., died at his home November 8 of pneumonia, age 25 years. His entire business experience had been with this concern, with whom he held a responsible position.

Manufacturers

Link-Belt Co., of Philadelphia, Chicago and Indianapolis, have issued Book No. 353, a treatise entitled "Economical Handling of Coal and Ashes and Reserve Coal Storage," by Henry J. Edsall, M. E. Here are fifty-two pages of text, illustration and outline drawings, describing a variety of installations fitted for plants of all kinds and of all sizes. The book seems to cover the subject thoroughly, and as a means of information on fuel and labor conservation, as a text book on the subject, every plant owner and engineer will find this pamphlet invaluable.

The Raymond Bros. Impact Pulverizer Co., Chicago, have made their newest catalog, No. 13, a compendium of usefulness. For it is not only a catalog of the Raymond products, roller mills and pulverizers, with air and screen separation for grinding all kinds of materials to powdered form, dust collectors and accessories, but it contains some very good general ideas regarding pulverizing problems. Word and illustration and tracing help to a good understanding of the whole subject. It is a complete and interesting catalog of grinding machinery, printed in the printer's best art.

Incorporations

The Western Lime Products Co. Los Angeles, Cal. Capital stock, $25,000. The incorporators are W. L. Mason, J. G. Hately and Hoyt Post, Jr.

Castalia Agricultural Lime & Supply Co., Castalia, Ohio; $5,000. Incorporators: F. C. Powers, L. M. Kirkpatrick, W. S. Kirkpatrick, F. C. Nolan and James Nolan.

Southern Mining & Gravel Co., Montgomery, Ala.; to buy, sell and own mineral lands; $2,000. Incorporators: T. H. Spencer and others.

The Cambridge Sand & Gravel Co., of Boston, has been incorporated to deal in sand, gravel and building supplies. Capital, $50,000. The incorporators are Thomas W. Hodgkiss, of Everett; James H. Vallely, of Cambridge, and Willis N. Tuller, of Boston.

The Norco Marble Co., of Cleveland, Ohio, has been chartered with a capital of $300,000 to manufacture and deal in sand stone, slate, marble and other stones. The incorporators are H. M. Owen, C. A. Meister, F. M. Zeg, M. M. Rich and C. L. Giersch.

Crotch Island Granite Corporation, $100,000. A. S. Littlefield, Rockland, Me. Conducting granite business in all its branches. Pres., A. S. Littlefield; Treas., Margaret L. Simmons; Directors, A. S. Littlefield, Margaret L. Simmons, O. H. Tripp, Rockland, Me.

New York Trap Rock Corp., Rockland Lake, N. Y.; quarrying, manufacture and sale of trap rock, crushed stone and other stone products; $4,750,000. Incorporators: V. D. H. Jones, R. W. Jones, Jr.; A. E. McVee, 120 Broadway, N. Y.

The Superior Gypsum Plaster Co., Los Angeles, Cal., recently organized with a capital of $100,000, is said to be planning for the establishment of a local plant. Charles H. Wilson, H. L. Coley, Frank E. Hayward and William G. Calder, all of Los Angeles, are interested in the company.

New York-Bingham Mining Co., $64,000. Aaron B. Cole, Kittery, Me. Operate lands containing oils and minerals of all kinds and the products therefrom. Pres., Aaron B. Cole, Eliot, Me.; Treas., M. E. Anderson, Kittery, Me. Directors: Aaron B. Cole, M. E. Anderson and L. B. Cole, Eliot, Me.

Gulfport Oil and Refining Co., $100,000. The Corporation Trust Co., Portland, Me. Develop oil, gas and other mineral lands. Pres., R. L. Johnson; Treas., E. Connor; Clerk, A. B. Farnham, Portland, Me. Directors: R. L. Johnson, E. Connor, David F. Drew, Chas. W. Hamilton, J. W. Cady, C. H. Bachelder, Portland, Me.

San Joaquin Portland Cement Co. Capital, $250,000. Plant at Porterville, Cal. Incorporated by W. J. Dingee of San Francisco. Company has purchased 160 acres. Plant to be built on unit plan. The first unit will have capacity of 1,000 bbls. daily. Will also produce ground agricultural limestone. Cement dust to be converted into potash for commercial fertilizer.

A. F. Merrill Company, Inc., $100,000. 49 Hammond Street, Bangor, Maine. To operate lands containing wood, coal, stone, minerals and ores of all kinds. Pres., Earl C. Merrill, Eddington, Me.; Treas., Frank H. Thomas, Brewer, Me.; Clerk, Frank H. Thomas. Directors: Earl C. Merrill, Frank H. Thomas, Charles P. Conners, Bangor, Me., Calvin P. Thomas, Brewer, Me., H. Eugene Collett, Bangor, Me.

A $500,000 corporation is being organized at Fort Smith, Ark., to take over the operation of the lime fields at White Cliffs, near Ashdown, Little River county. Fort Smith, Texarkana and Fordyce capitalists are interested. The property is in operation at present making lime for agricultural purposes, but the new company will make cement the chief article of manufacture. The company controls 2,600 acres of the richest lime land in the Southwest.

Lime

The American Lime & Stone Co., Tyrone, Pa., is planning a new hydrating plant at Bellefonte, Pa. The works will consist of hydrating mill, shops, rotary railroad and other structures. A. G. Morris is president.

Side tracks have been laid to the new lime quarries west of Manitou, Col., which were purchased some time ago by the Gannister Mining Co. of Canon City. Work will be pushed rapidly, and it is the intention of the company to have a weekly output of 15 carloads of lime rock. It will be burned in the company's kilns at Canon City. The company has secured a large acreage of the material, which is said to be superior in quality to almost any field in the state. The rock is loaded directly from the quarry into the cars.

Quarries

Amos Shank, Rowenna, Pa., and Gall & Co., Marietta, Pa., contractors, are planning a rock crushing plant.

The Jones & Laughlin Steel Co., Pittsburgh, Pa., will build a new five-story crusher building at its works, to cost $25,000. A smaller crusher plant will also be constructed at a cost of $12,000.

The National Stone Co. has taken over the plant and quarry of the old South Side Stone Co., Bloomington. W. J. Dust, secretary-treasurer of the latter company, retires from the business, while S. C. Freese of Bloomington will remain as manager. The consideration in the purchase was $25,000.

The Philadelphia Quartz Co., 121 South Third street, Philadelphia, has been granted permission by the New Jersey Board of Public Utility Commissioners to purchase property, comprising about 9½ acres, from the Central Railroad of New Jersey at Woodbridge for about $4,700. The company will operate a works at this location.

The Carbon Limestone Co. of Youngstown, O., with quarries at Hillsville, Pa., have contracted for the installation of an additional unit in their pulverizing plant, and it is hoped that this extra unit will increase the production of agricultural limestone to approximately 75,000 tons annually. The Carbon Limestone Co. have a high grade product, which they grind exceedingly fine, much of it being used for asphalt filler. The new installation should be in operation early in February, 1919.

Sand and Gravel

The Avon Sand & Gravel Co., Rochester, N. Y., has been dissolved.

The city of Richmond, Ind., is considering the purchase of a gravel pit from Joseph Gist.

The Silica Sand Co., Steelton, Pa., has been organized with a capital of $100,000 by C. C. and M. A. McCumbler, Harrisburg.

The plant of the Windber Silica Sand Co. at Windber, Pa., recently incorporated, will have a capacity of 75 tons a day. A rock crusher will be installed.

A large order for gravel has been placed by the Emergency Fleet Corporation with the Bangor Cast Stone Products Co. This gravel will be used in the erection of 125 houses at Bath, Me. Other large orders from other large cities for similar purposes have also been received.

C. C. Whiteside, former manager of the Youngstown (Pa.) Sand & Gravel Co., will January 1 sever his connection with the Hog Island ship yards, where he has been employed since July 1. A. H. Siegle has superintended the plant operations during Mr. White's absence.

The Pioneer Sand & Gravel Co. of Seattle, Wash., having purchased several lots of the Lake Union shore lands for $25,000, will soon improve the site by the erection of bunkers and modern equipment. The lots are centrally situated and will serve well as a distribution center.

The Niles Sand, Gravel & Rock Co., San Francisco, is suing R. C. Storrie & Co., contractors of the Twin Peaks tunnel, claiming a balance due of $15,195 for concrete gravel, crushed gravel and sand. The Niles company's contract with the Storrie company is said to have been for $103,116 and of this amount it is admitted that $87,920 was paid on account. The total amount of material delivered, according to the plaintiff, was 137,488.22 tons. The defendants have answered the complaint by raising a number of technical points, claiming that the contract called for delivery of sand and gravel to weigh not exceeding 2400 lbs. per cu. yd. and to be paid for at the rate of 75 cents per ton of 2000 lbs. It is further claimed by them that the materials furnished weighed nearer 3000 lbs. per cu. yd. and that full payment of the claim has therefore been made.

USED EQUIPMENT

ADVERTISEMENTS in this department are for the Sale and Want of Second-Hand Machinery and Equipment.

RATES: $2.50 per column inch per insertion.

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ONE SECOND HAND No. 4 GATES CRUSHER

Must be of late make and in good condition. Address

Belvidere Stone Company, Belvidere, Ill.

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LOCOMOTIVES **CARS** **CRANES**
Shovels **Machinery** **Piling, Etc.**

USED PLOW AND CRUCIBLE STEEL CABLE

Have sold four carloads this season and have on hand 40,000 feet in various sizes and lengths, 6x7 and 6x19 construction, all carefully selected, 90% efficiency.

Will ship subject to inspection

B. Carpenter, 118 N. La Salle St., Chicago

Lime Burning Equipment

ROTARY KILN 5'x60'; ROTARY COOLER 36"x 30'; GAS PRODUCER, Richardson Automatic SCALES, Motors, Blowers, etc. Used 3 months. Capacity 10 tons per day.

J. ALEX. MAYERS, Engr.
55 William St., N. Y. C.

GYRATORY CRUSHERS

1 Gates No. 12 **3 Number 5** **1 Kennedy 10**
3 Kennedy 6 **3 Austin No. 8** **2 McCully 7½**

Locomotives, Cars, Cranes, Steam Shovels

J. F. DONAHOO CO., Birmingham, Ala.

FOR SALE

1⅛ cu. yd. Dipper Full Circle Swing

STEAM SHOVEL THEW, Type 1

On Traction Wheels. Working Weight 30 tons. Perfect Working Order. Immediate Delivery.

E. C. SHERWOOD
50 Church Street, NEW YORK

We Have for Sale

TWO ROTARY DRYERS

In first class condition for Immediate Shipments

HENRY H. WOOD, Inc.
68 Beaver Street, New York City

FOR SALE

Used steam drill and six brand new End Dump Steel Quarry Cars, two yard capacity, equipped to handle from either end or side. Manufactured by Austin Manufacturing Co.

THE SHERMAN NURSERY COMPANY, Charles City, Iowa.

FOR SALE

1 Corliss Engine 11x18, about 70 H. P.
1 Fort Wayne Crusher No. 8.
2 Boilers, 1 vertical and 1 horizontal, about 50 and 60 H.P.
1 Derrick with boiler and engines in working condition.
1 10-inch Erie Pump.

We reserve the right to dispose or hold above equipment.

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P. O. Box 533, BURLINGTON, IOWA.

STEAM SHOVELS
LOCOMOTIVES
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Try us for honest value in dependable "used" material of this character.

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1048 Drexel Building
PHILADELPHIA, PA.

Dealers in "Used" but "Not Abused" Machinery

FOR SALE

ONE YARD

Sauerman Power Scraper

with 90 H. P. Thomas El. Hoist A. C. 3-Phase 60 Cycles, 1400 feet of ⅞ cable and all necessary blocks.

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538 S. Clark St., Chicago

I enclose you $2.00. Please send me the next 26 numbers.

Producer—

Lime ☐
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Check which.

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FOR SALE—A twenty-year lease on eleven acres of the finest Lime Stone rock in Illinois. The quarry is opened and it covers a river bluff at Pearl, Illinois, on the C. & A. Railroad and Illinois river, $4,000.00.

J. D. HESS, **Pittsfield, Illinois**

For Sale or Lease

Stone Quarry with Crusher, Lime Kilns, Siding, and Equipment for Operating Same.

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HOLLIDAYSBURG **PENNSYLVANIA**

FOR SALE

Complete gypsum plaster plant, located in Utah. Plant contains the following equipment: One Jaw Crusher, one Rotary Crusher, 20 tons' capacity per hour, five 36" Ehrsam Vertical Burr Mills, three 8 ft. calcining kettles, one No. 2 Enterprise Mixer, one Hair Picker, together with elevators, conveyors, shafting, pulleys and all equipment and tools, also heavy wood frame building. Plant has seen only about eight or ten months' continuous operation. Blue prints can be furnished parties interested, also comment.

Apply to JAMES H. MOYLE

Treasury Building **Washington, D. C.**

FOR SALE—Crushed stone plant near Wymore and Blue Springs, Neb., on Union Pacific and C., B. & Q. railroads; the quarry farthest west in Nebraska or Kansas; 40 ft. of stone; light stripping; large territory; good prospects; 67 ft. of shale under quarry bed. Ideal location for fancy brick or Portland cement plant. Address G. H. Davis, Blue Springs, Neb.

FOR SALE OR LEASE: Crushed stone quarry situated near Wilkes-Barre, Pa. Very hard green sandstone, practically equal to trap rock for road material. Quarry equipped to produce five to six hundred tons per day—has frequently run eight hundred. Ample rail facilities and an extensive market. For detailed information communicate with Arthur L. Stull, 182 S. Franklin St., Wilkes-Barre, Pa.

FOR SALE

CRUSHED STONE PLANT

in Central New York

Exceptional production facilities and quality of stone for fluxing and commercial purposes. Market for entire production. Labor and Material guaranteed. Address

Box 1278, care ROCK PRODUCTS

Help Wanted

WANTED—Quarry Supt. for Crushed Stone Plant, Anna, Ill. One No. 5 and one No. 7½ Austin Crushers, all electrically operated. Pulverator. State experience and salary expected and when available. Address C. I. P. S. Co., Mattoon, Ill.

WANTED—First-class quarry superintendent to handle large quarry with crushing plant in southern Ohio. Position open February 1st. Only first-class men need apply. References required; past ability. Address Box 348, Huntington, W. Va.

WANTED — Practical millwright or engineer capable of looking after repairs and upkeep of a number of stone crushing plants widely scattered. Preferably one familiar with quarrying transmission and crushing machinery. Steady position with advancement for right man—$200 per month and more if worth it. Advise fully. Box 1286, care ROCK PRODUCTS.

WANTED

Mechanic and Millwright

For medium size rock crushing plant located in western Massachusetts. Must be able to install and repair all types cement mill machinery. This is a permanent position in one of the best plants of its kind in the United States.

Write, giving places worked last ten years, references and salary to begin.

C. P. TOMLINSON

577 Prospect Avenue **Hartford, Conn.**

WANTED—For large crushing plant, first class mechanic who thoroughly understands Gates and Austin crushing machinery. Satisfactory salary. Address Big Rock Stone & Construction Co., 111 Center Street, Little Rock, Ark.

WANTED—Established lime company wants experienced superintendent to operate quarry and hydrate plant. Excellent opportunity for right party. Give full particulars. Address Box 1285, care of ROCK PRODUCTS.

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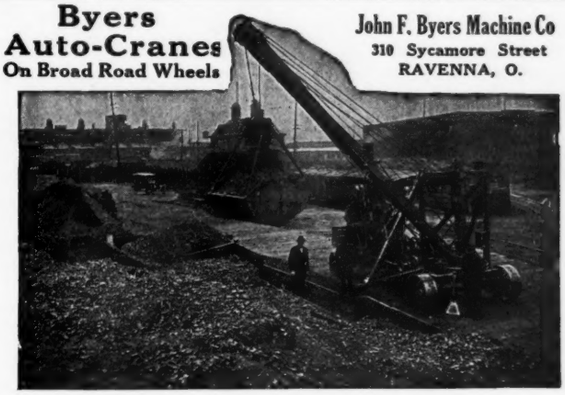

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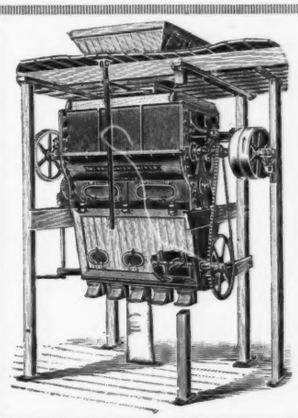

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MADE TO SUIT YOUR REQUIREMENTS
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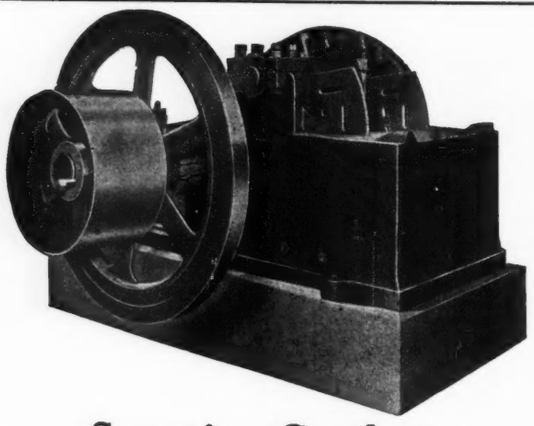

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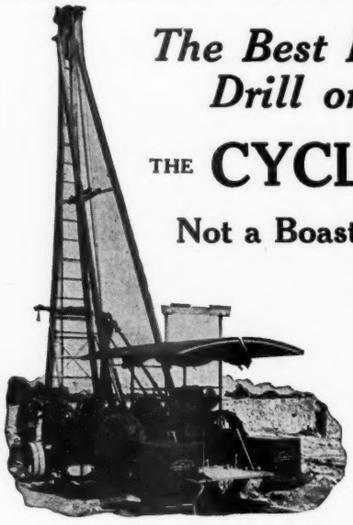
WEBB CITY & CARTERVILLE FOUNDRY & MACHINE WORKS
WEBB CITY, MO.



The Best Blast-Hole Drill on Earth

THE **CYCLONE** No. 14

Not a Boast—A FACT

We will prove the superiority of the No. 14 Drill by placing one of the outfits in your quarry against any or all other makes.

If the Cyclone doesn't out-drill and out-wear all other drills, we will remove it from the work without cost to you.

Our proposition gets below the paint—it eliminates calking points and evaporates hot air. It puts buying on a strictly engineering basis where it belongs.

Furnished in Steam, Gasoline, Compressed Air or Electric Power Traction or Non-Traction

Let us send you full particulars

THE SANDERSON-CYCLONE DRILL CO.
ORRVILLE, OHIO

Eastern and Export Office, **50 Church Street, New York**

Kilns

Vulcan Iron Works

WILKES-BARRE, PA.

Experienced in designing and manufacturing Rotary Kilns for calcining of Lime, Cement, Dolomite, Magnesite, etc., together with their auxiliary equipment of Dryers and Coolers.

Drying installations for sand, all grades of rock, silica, and other materials requiring special treatment.

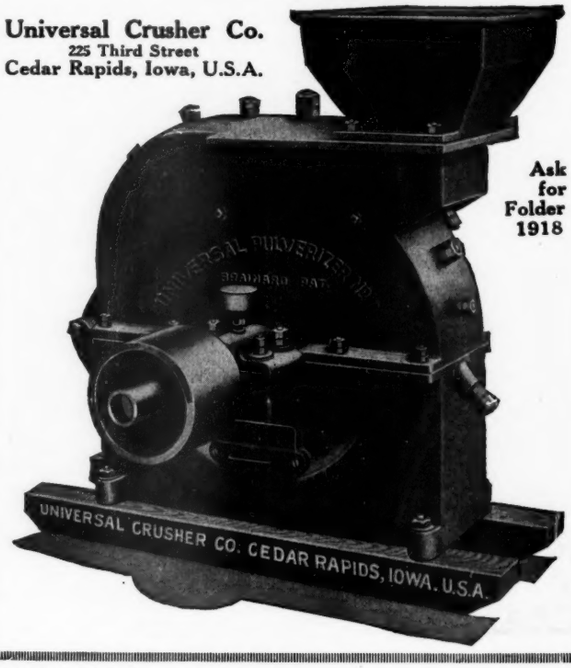
Quarry, Industrial and Long Haul **Locomotives** of all descriptions

UNIVERSAL CRUSHERS

The biggest value for your money. Universal crushers and pulverizers reduce stone to desired size or fineness in a jiffy!

Fifteen years of designing and building experience have made possible the exceptional ability of Universals.

Universal Crusher Co.
225 Third Street
Cedar Rapids, Iowa, U.S.A.



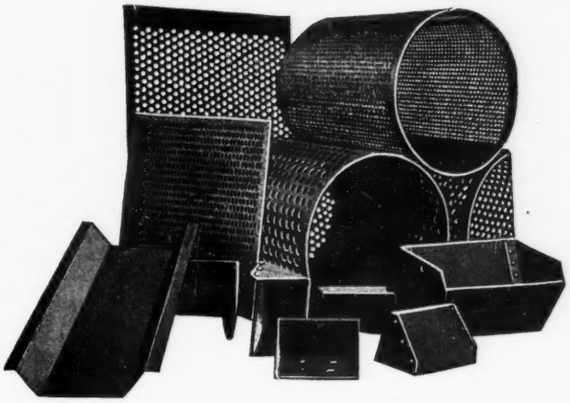
Ask for Folder 1918

Saying "I saw it in ROCK PRODUCTS" will bring quick action.

Perforated Metal Screens

FOR

Stone, Gravel, Sand, Etc.



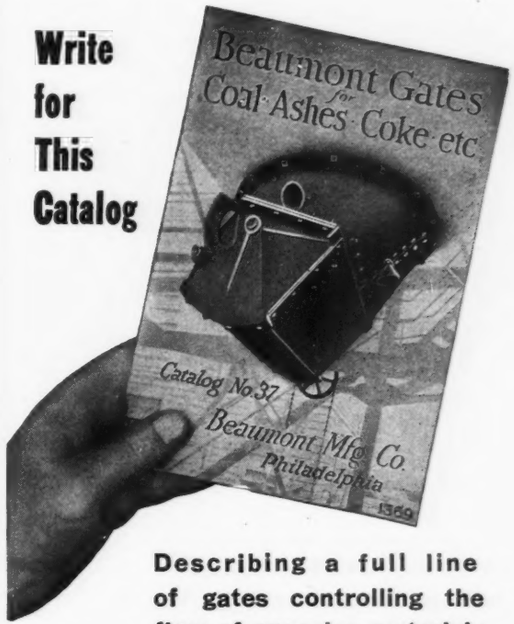
ELEVATOR BUCKETS

PLAIN AND PERFORATED

General Sheet and Light Structural Work

HENDRICK MFG. CO.
CARBONDALE, PA.
New York Office, 30 Church Street

Write for This Catalog



Describing a full line of gates controlling the flow of granular materials

BEAUMONT MFG. CO.

326 Arch Street, Philadelphia
New York: 50 Church St Boston: 141 Milk St.

17,250 B. H. P.

Besides numerous heating furnaces of various types are now being operated or equipped with "Lopulco" systems for burning pulverized coal.

Their owners will be free from all the worries arduous fire-room labor brings, but have plenty of steam or heat at all times, together with remarkable fuel saving.

Your plant presents great possibilities.

Industrial Department

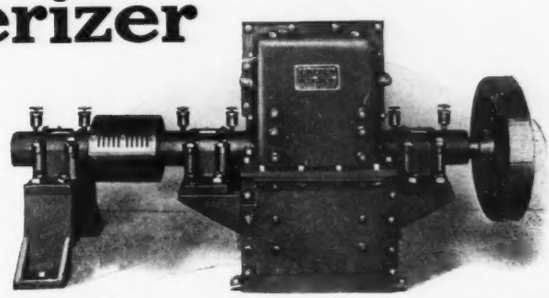
LOCOMOTIVE PULVERIZED FUEL COMPANY

Transportation Building, Montreal 30 Church Street, New York

The K-B Pulverizer

is credited with being the strongest, safest and sturdiest pulverizer of the hammer-mill type that has yet been designed.

We invite inquiries regarding the material you want to crush.



ILLUSTRATED CATALOG & REFERENCES ON REQUEST

K-B PULVERIZER

K-B PULVERIZER COMPANY, INC., 86 Worth St., New York

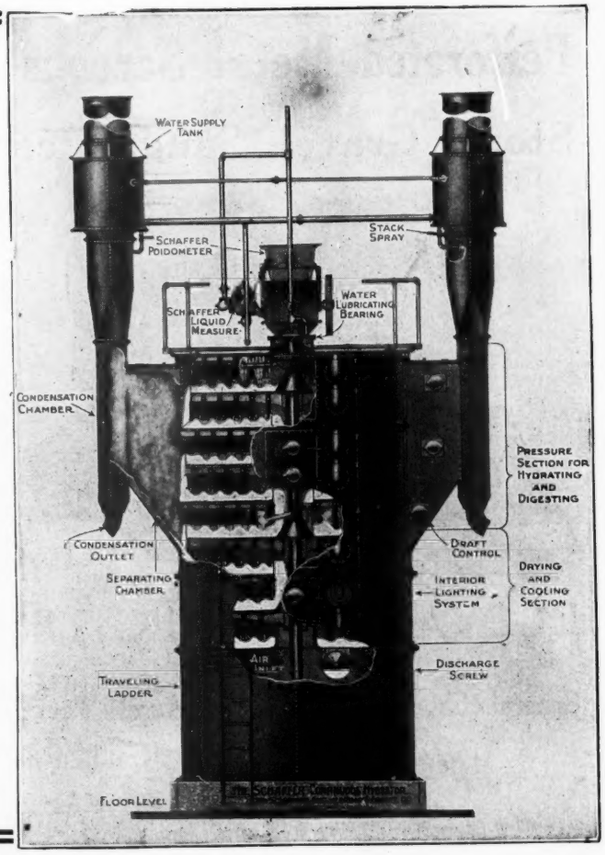
SCHAFFER
Continuous Lime Hydrators

AUTOMATIC operation delivers lime by **weight**, not volume, to the Schaffer Hydrator. Automatically, water, too, is added in correct proportion—insuring a continuous flow of a superior product.

The flexibility of control enables the use of either high calcium or dolomite lime, while at the same time the automatic operation of Schaffer Hydrators solves the labor problem, as they require but little attention.

Our literature on the Schaffer Hydrator covers all the questions you now have in mind. Write for it at once!

SCHAFFER ENGINEERING & EQUIPMENT COMPANY
TIFFIN, OHIO



G-W LOADERS

* * * reduce delivery cost and eliminate idle trucks—improving your service—because they save much time in loading.

— they save a great deal of hand labor, thereby reducing your payroll.

— their operation is economical because they handle any loose material at a very low cost per ton.

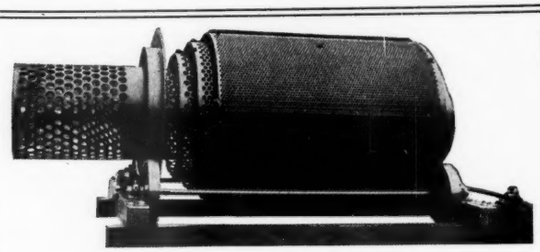
and G-W is the Loader you will buy because it is the most efficient and durable loader you can find.

Can we send you literature explaining G-W Loaders in detail?

GIFFORD-WOOD CO.
HUDSON, N. Y.

New York Buffalo Philadelphia
Boston Chicago

STONE SCREEN SECTIONS
CYLINDERS
DUST JACKETS
MADE TO FIT ALL MAKES AND SIZES OF REVOLVING SCREENS



THE O'LAUGHLIN SCREEN (PATENTED)

SAND and GRAVEL SCREENS
CYLINDERS **SCREEN PLATES**
CONICAL SCREENS
EVERYTHING IN SCREENS
QUICK SHIPMENTS

JOHNSTON & CHAPMAN CO., 2921 Carroll Ave. CHICAGO

To say you saw the ad in ROCK PRODUCTS gives tone to your inquiry.

This

Type "A"
Electrically Operated STATIONARY CRANE

picks up the material out of the barge and deposits same in the elevated hopper. The crane under ordinary working conditions will handle from 50 to 80 tons per hour.

The McMyler Interstate Co.
BEDFORD, OHIO (Cleveland, Ohio)
BRANCH OFFICES
1756 Hudson Terminal Bldg...New York City
1503 Fisher Bldg.....Chicago, Illinois
P-10

WELLER MADE CHICAGO

STONE AND GRAVEL ELEVATORS BELT AND PAN CONVEYORS
FURNISHED COMPLETE

We Have What You Need!

That is the knowledge of our patrons—that we can replace at a *moment's* notice, *any part* of their plant. You'll realize this fact if you send for our general catalog.

If you are interested in any specific piece of equipment, let us know. We will send comprehensive literature explaining what we have to offer. Don't delay.

WELLER MFG. CO.

ELEVATING, CONVEYING AND POWER TRANSMITTING MACHINERY

1856 N. Kostner Ave. CHICAGO

You will get entire satisfaction if you mention ROCK PRODUCTS.

DU PONT AMERICAN INDUSTRIES

For Sure-Fire Blasting

Be Sure To Use

DU PONT
EQUIPMENT

The efficiency of our Red Cross and other explosives is reflected in Du Pont detonators, fuses, connecting and leading wires, crimpers, blasting machines and other apparatus.

By efficiency, we mean their dependability to perform satisfactory work in meeting the various conditions for which they are designed.

Often, just a slight change in construction, dimension or composition of a blasting cap, squib, igniter, fuse or wire will overcome some difficulty encountered in particular instances.

Our Blasting Supplies Catalog is a complete handbook on correct blasting equipment. Send for a free copy.

E. I. Du Pont de Nemours & Co.

Powder Makers Since 1802

Wilmington Delaware

The Dupont American Industries Are

E. I. du Pont de Nemours & Co., Wilmington, Del. Explosives.
Du Pont Chemical Works, New York, Pyroxylin and Coal Tar Chemicals.
Du Pont Fabrikoid Co., Wilmington, Del., Leather Substitutes.
The Arlington Works, 725 Broadway, New York. Ivory Py-ra-lin and Cleanable Collars
Harrison Works, Phila., Pa., Paints, Pigments, Acids, Chemicals.
Du Pont Dyestuffs Works, Wilmington, Del., Coal Tar Dyestuffs.

DU PONT

Wherever Fuse is Used

whether it be for the great record-breaking 180,000 ton blast made early this Spring by the Bethlehem Mines Corporation, or for the every day affairs,

CORDEAU-BICKFORD FUSE

becomes the choice for efficient, sure results. It adds 10 to 20 per cent to the efficiency of explosions—can be set for discharge at one time, in groups or seriatim.

Not sensative to shock or friction—it's safe

THE ENSIGN-BICKFORD CO.

SIMSBURY, CONN.

The Original manufacturers of Safety Fuse

ESTABLISHED 1836

KISSEL TRUCKS

"First in War— First in Peace"

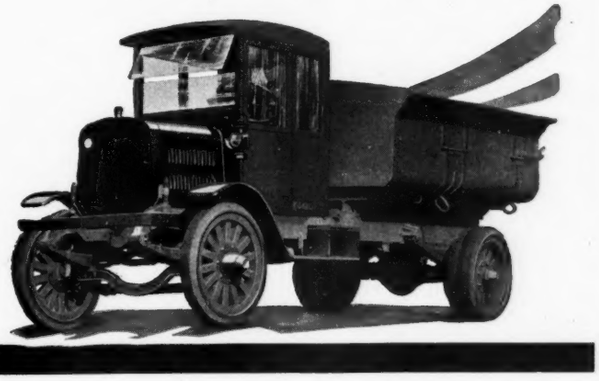
JUST as Kissel Trucks were first in meeting the wartime demands made upon industrial America, so they are first in solving the extraordinary problem of peace times.

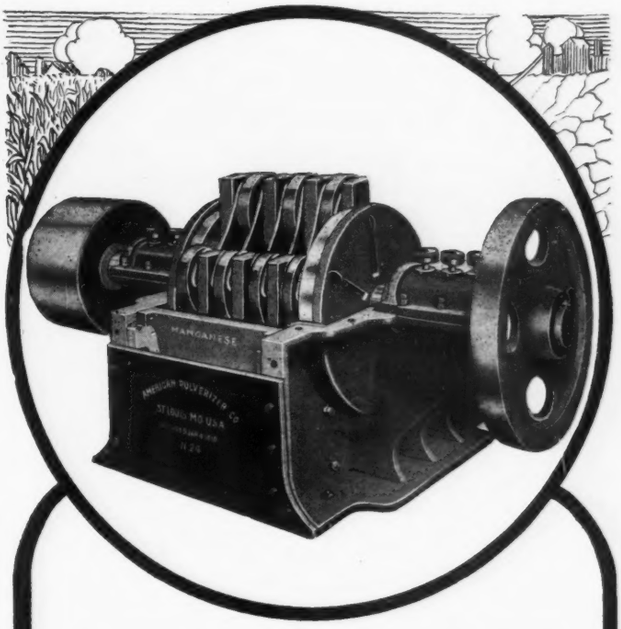
It is in meeting increased haulage demands, that Kissel Trucks give evidence of their real superiority.

The sound Kissel construction features, including the ALL-YEAR Cab that insures continuous use of Kissel Trucks throughout the winter months, will enable you to set a transportation pace from now on.

If you have been disappointed in being unable to buy Kissel Trucks for some time past — see your nearest Kissel dealer today for earliest delivery.

Kissel Motor Car Co.
Hartford, Wis., U. S. A.





LIMESTONE for the Farmer

Each day a greater number of Farmers come to realize the importance of limestone as a fertilizer. With this constantly increasing demand an

AMERICAN RING PULVERIZER

will make limestone a profitable product for you. A simple, efficient, automatic machine—guaranteed to fill your needs at the lowest power consumption.

Write for plans and prices today!

AMERICAN PULVERIZER CO.
Corner 18th and Austin Streets
ST. LOUIS, MO.

It gets immediate attention if you mention ROCK PRODUCTS.

WATERBURY
WIRE ROPE

The right rope for every purpose is worked out to a remarkable degree in the line of Waterbury Ropes.

As an example of EXACT application there is the Waterbury Non-Spinning Hoisting Rope. It is constructed so that it is non-rotating and overcomes the spinning of loads while being hoisted by a single line. It has great flexibility and sectional area and stands a large amount of wear and tear.

CATALOG

A 220 page cloth bound Rope Manual covering all kinds of rope—Fibre, Wire, Fibreclad Wire and Armored Wire will be mailed free upon request.

WATERBURY COMPANY
63 PARK ROW, NEW YORK

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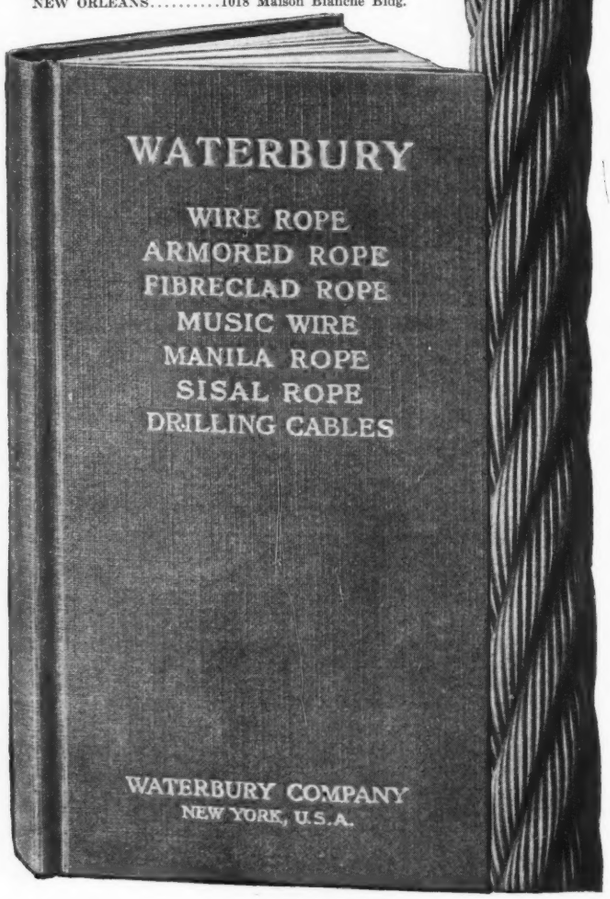
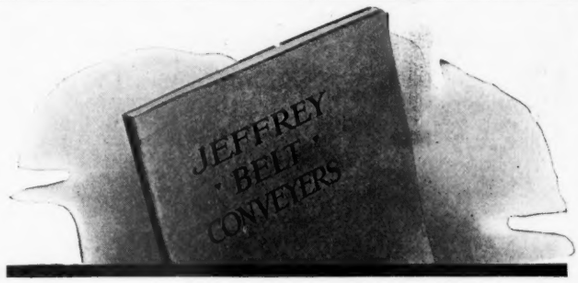
SAN FRANCISCO.....151-161 Main St.
DALLAS, TEXAS.....A. T. Powell & Co.
NEW ORLEANS.....1018 Maison Blanche Bldg.



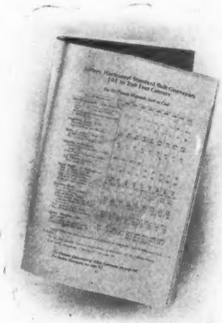


Here's a Complete Text Upon the Belt Conveyer

The Best in Belt Conveyer practice has been collected and printed in this Catalog, the scope of which may be gathered from the following subjects, presented in a style both interesting and instructive:

Early Types of Belt Conveyers.
Improvements in Type for Better Service.
Industries Using Belt Conveyers.
Typical Applications for Belt Conveyers.
Condensed Data for the Busy Engineer.
Belt Tension and Horse Power Pull.
General Tables of Belt Capacities.
Belting Facts in Widths, Plys and Covers.
Protecting the Life of The Conveyer Belt.
Curve of Belt from Horizontal to Incline.
Various Forms of Belt Conveyer Drives.
Spacing of Conveyer Parts for Best Service.
Methods of Loading and Unloading Belts.
Jeffrey Belt Conveyer Parts.
Conveyer Belting of Various Kinds.
Unloading Trippers and Installation Views.
Rules for Using "Standard" Conveyers.
Tabulated List of the "Standard" Conveyers.
General Dimensions for Installing "Standard" Conveyers.
Tabulated Weights of Various Materials.
Jeffrey Belt Conveyers in Many Industries.

Every Engineer, Contractor or Manufacturer who is interested in saving Time, Labor, and Expense in the handling of materials needs this book.



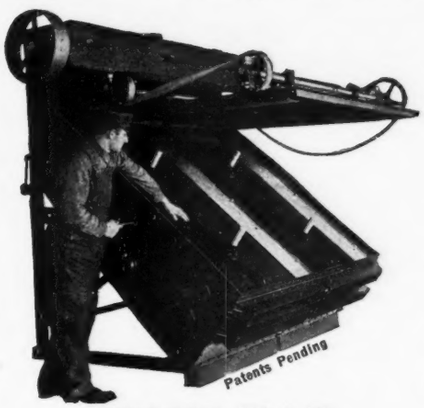
One of the specification spaces of the new Catalog

Write TODAY for copy of Catalog No. 175-A

The Jeffrey Mfg. Co.
COLUMBUS, OHIO

Prompt attention will be given your inquiry if you mention ROCK PRODUCTS.

The "Keystone" of Vibrating Screens



WHIP-TAP
Separator Screen
Screens Limestone, Silica, Gravel and other Rock Products

WRITE FOR PARTICULARS

A TAUT screening surface at "drumhead" tension is the keystone of an efficient vibrated screen around which everything else must be built.

Without a taut screening surface, effective vibration is impossible and the maximum tonnage and thorough separation cannot be obtained.

In the WHIP-TAP Separator, no tacks, bolts, or rivets, are used in attaching the wire cloth to the screen frame—as shown in above drawing, every wire of the screening surface is turned over and firmly clamped into a metal edge which hooks over the frame; and, when the tension is applied by turning the stretcher bars (of which there are three) with a key, the frame expands and every individual cross wire is stretched taut.

WHIP-TAP screen cloths are always operated at drumhead tension; every wire is vibrated; the material is spread over the entire screen; and the maximum tonnage of closely sized product is produced.

THE W. S. TYLER COMPANY

Manufacturers of TYLER "Double Crimped" Wire Cloth and Mining Screen **CLEVELAND, OHIO**

UNDIVIDED RESPONSIBILITY

It is a tremendous advantage to a purchaser to look to one manufacturer for the satisfactory operation of his complete equipment—to concentrate the full responsibility upon one great, dependable institution.

That is why engineers are more and more specifying Allis-Chalmers Products for complete installations.

Our Various Engineering Departments are at your service

Sales Offices in All Principal Cities

Our Name Is Your Assurance

ALLIS-CHALMERS

MANUFACTURING COMPANY, Milwaukee, Wis.

Tell the advertiser you saw his ad in ROCK PRODUCTS. He'll appreciate it.

WORTHINGTON

— One Name
One Standard of Excellence
A Thousand and One Products

A list of products ranging from water meters to great pumping engines, from oil engines and gas engines to centrifugal pumps, from vacuum pumps to air compressors, from domestic lighting or water supply units to tractors, from mining to cement-making machinery and mammoth rock crushers—

A list of products which serve alike the city dweller and the farmer, the manufacturer and the miner, the marine engineer and the construction engineer—

And facilities unequalled in size and completeness for the production and distribution of this great list of products—

These are some of the meanings of the Worthington name to American industry and to the American people.

Worthington Pump and Machinery Corporation
115 Broadway, New York City
Branch Offices in 24 Large Cities

Worthington Works, Harrison, N. J. One of the eight Great Worthington plants

LARGEST MAKERS OF PUMPING AND MINING MACHINERY

Classified Business Directory

BAGS AND BAG MACHINERY
Jaite Company, The
Urschel-Bates Valve Bag Co.

BIN GATES
Beaumont Co., R. H.

CARBIDE LIGHTS
Alexander Milburn Co., The

CALCINING MACHINERY
Atlas Car & Mfg. Co.
Butterworth & Lowe

CEMENT, PORTLAND
Carolina Portland Cement Co.
Huron Wyandotte Portland Cement Co.

CHAINS AND TRANSMITTING MACHINERY
Stephens-Adamson Mfg. Co.

CONVEYORS AND ELEVATORS
Caldwell, H. W., & Son Co.
Jeffrey Mfg. Co., The
Webster Mfg. Company
Gifford-Wood Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

CRANES
Locomotive Gantry
Ball Engine Co.
Byers Mach. Co., John F.
McMyler-Interstate Co.

CRUSHERS AND PULVERIZERS
Allis-Chalmers Mfg. Co.
American Pulverizer Co.
Austin Mfg. Co.
Bacon, Earle C.
Bradley Pulverizer Co.
Butterworth & Lowe
Chalmers & Williams
Gruendler Pat. Crusher & Pulverizer Co.
Jeffrey Mfg. Co.
K.-B. Pulverizer Co.
Kent Mill Co.
Lewistown Foundry & Machine Co.
McLanahan-Stone Machine Co.
Pennsylvania Crusher Co.
Raymond Bros. Impact Pulverizer Co.
Stroh Steel Hardening Process Co.
Traylor Eng. & Mfg. Co.
Universal Crusher Co.
Webb City & Carterville F. & M. Works.
Williams Pat. Crusher & Pulverizer Co.
Worthington Pump & Mach. Corp.

DRILLS
Sanderson Cyclone Drill Co.
Sullivan Mach. Co.

DRYERS
Ruggles-Coles Eng. Co.

ELEVATOR BUCKETS
Hendrick Mfg. Co.

ENGINEERS
Bacon, Earle C., Inc.
Fuller Engineering Co.
Smidth & Co., F. L.
Schaffer Eng. & Equip. Co.

EXCAVATORS
Ball Engine Co.
Dull, Raymond W., Co.

FUSES
Ensign-Bickford Co.

GEARS
Caldwell, H. W., & Son Co.

GYPSUM-PLASTER
Best Bros. Keene's Cement Co.
Wheeling Wall Plaster Co.

HYDRATING MACHINERY
Miscampbell, H.
Schaffer Eng. & Equip. Co.

INDUSTRIAL CARS
Watt Mining Car Wheel Co.

LIME, HYDRATED
Woodville Lime Products Co.

LABORATORY EQUIPMENT
Bausch & Lomb Optical Co.

LIME KILNS
Steacy-Schmidt Mfg. Co.
Vulcan Iron Works

LOADERS AND UNLOADERS
Gifford-Wood Co.
Jeffrey Mfg. Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

LOCOMOTIVES
Fate Co., J. D.
Jeffrey Mfg. Co., The

MORTAR COLORS
Chattanooga Paint Co.

MOTORS, ELECTRIC
Gifford-Wood Co.

MOTOR TRUCKS
Kissel Motor Car Co.
Pierce-Arrow Motor Car Co.
Sterling Motor Truck Co.
White Company, The

PAINT AND COATINGS
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PERFORATED METALS
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PORTABLE CONVEYORS
Portable Mach. Co.

POWER TRANSMITTING MACHINERY
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POWDER
Atlas Powder Co.
Du Pont de Nemours Co., E. I.
Grasselli Powder Co.

PULVERIZED FUEL EQUIP.
Aero Pulv. Co.
Locomotive Pulv. Fuel Co.

SEPARATORS
The W. S. Tyler Co.

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Gifford-Wood Co.
Hendrick Mfg. Co.
Johnston & Chapman Co.
Stephens-Adamson Mfg. Co.
Sturtevant Mill Co.
The W. S. Tyler Co.

SHOVELS
Steam and Electric
Ball Engine Co.
The Osgood Co.

STEEL PROCESS
Stroh Steel Hardening Process Co.

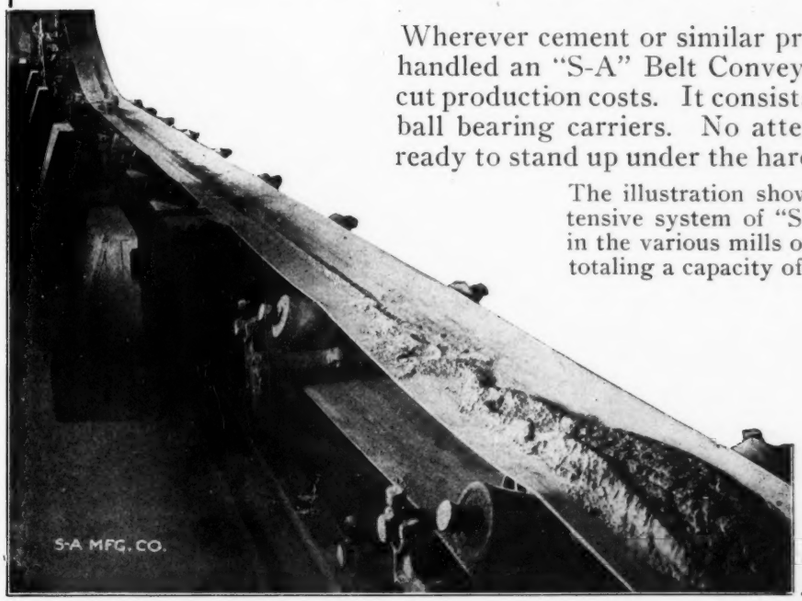
TESTING SIEVES AND TESTING SIEVE SHAKERS
The W. S. Tyler Co.

WIRE ROPE
American Steel & Wire Co.
Leschen, A., & Sons Co.
Waterbury Co.

WIRE CLOTH
Audubon Wire Cloth Co.
The W. S. Tyler Co.

"S-A" Belt Conveyors

have made good in cement mills and on all kinds of general cement work



Wherever cement or similar products of any kind are handled an "S-A" Belt Conveyor can save labor and cut production costs. It consists of a belt running over ball bearing carriers. No attention is required—it's ready to stand up under the hardest kind of service.

The illustration shows a part of the very extensive system of "S-A" Belt Conveyors used in the various mills of the Canada Cement Co., totaling a capacity of 20,000 barrels per day.

Write for the "S-A" Catalog

Stephens-Adamson Manufacturing Co.

Conveying, Screening and Transmission Machinery

Aurora, Illinois

Branch Offices in Principal Cities

STROH STEEL

"Wear Proof" Gears

GEARS of ordinary steel casting are **strong** enough, but under great pressure will not withstand abrasion—

but—take any desired steel, even the most ordinary quality, and subject it to STROH STEEL HARDENING PROCESS and the result will be a gear casting whose **wearing surfaces** are covered with Stroh Alloy—a covering that is "wear-proof"—

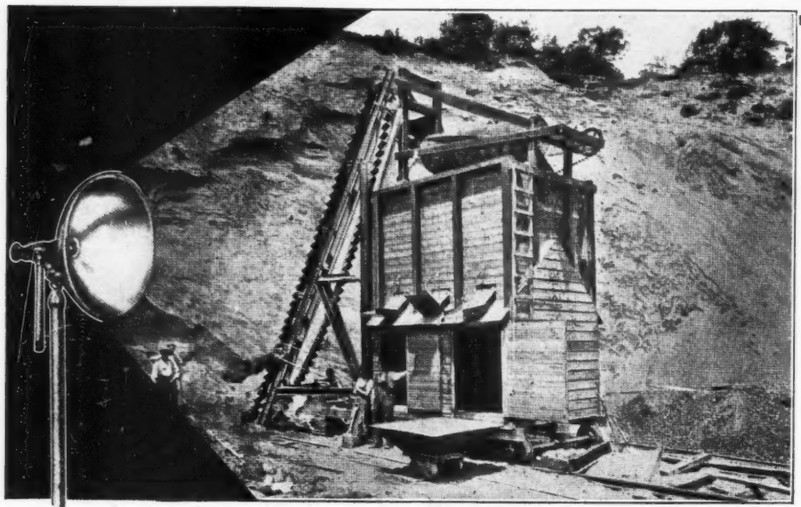
yet—the expense of STROH PROCESS is negligible compared to the saving in time and material it effects.

Our catalog contains much of interest to you. Send for it today!

STROH STEEL HARDENING PROCESS CO.

PITTSBURGH, PA.

F. LLOYD MARK, Monadnock Bldg., Chicago
Western Representative

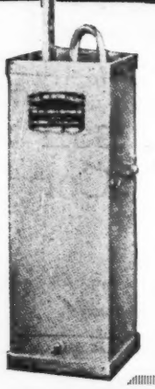


Turn Night Into Day

by using a

NEW MILBURN
Portable Carbide Light

The kind that burns ordinary carbide that's sold everywhere.



Mines equipped with New Milburns are independent of dark days—independent even of nightfall—for the wonderful New Milburn Lights, with capacity up to 25,000 candle power, give a powerful illumination that turns night into day.

They cost from 1c. to 4c. an hour, depending on candle power.

They operate absolutely automatically and require no attention.

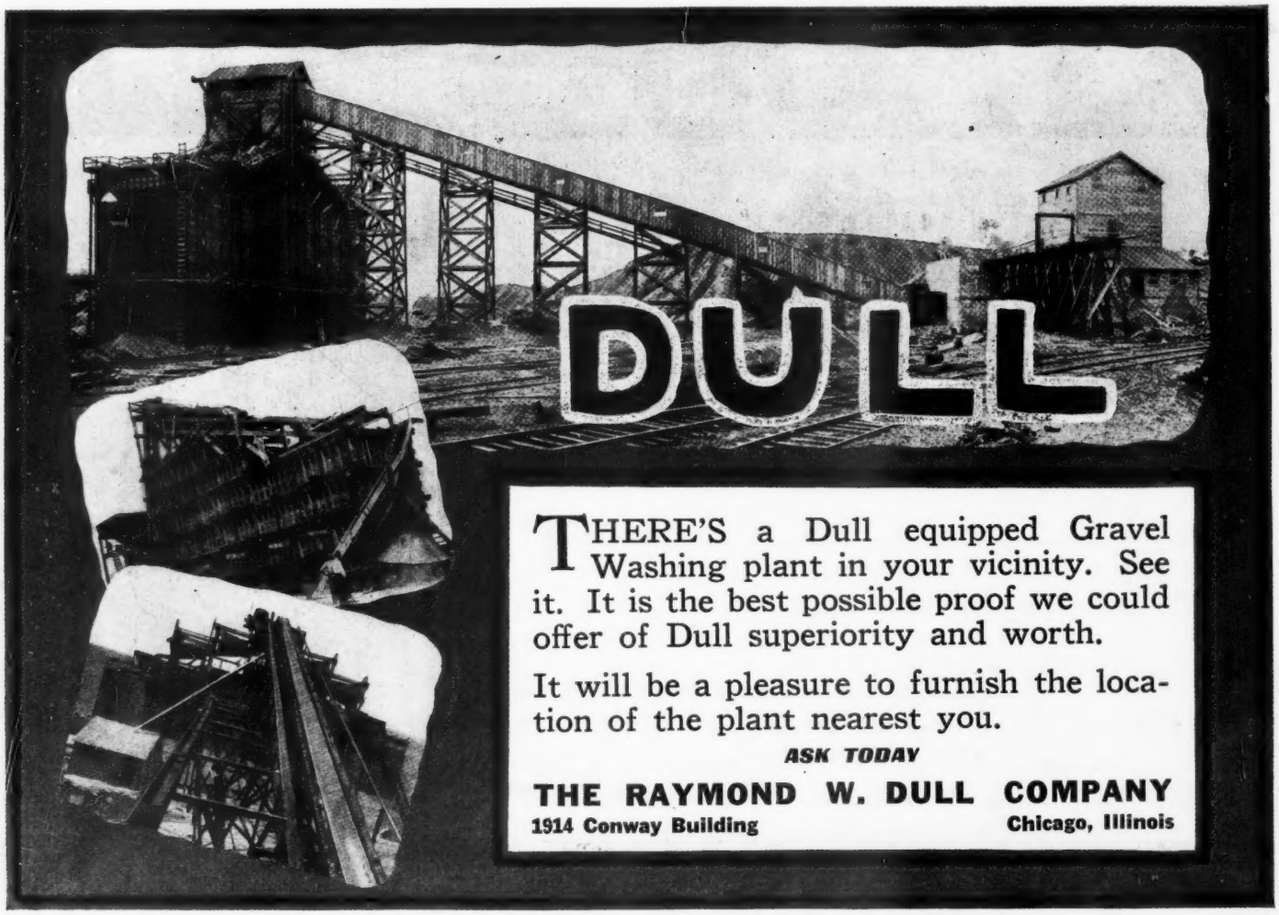
They don't overgenerate—and you CAN'T overcharge them.

They require only water and ordinary carbide, sold everywhere.

Circular 236 tells more about them!

THE ALEXANDER MILBURN CO., Baltimore, U. S. A.

Manufacturers of Portable Carbide Lights and Oxy-Acetylene Apparatus



THERE'S a Dull equipped Gravel Washing plant in your vicinity. See it. It is the best possible proof we could offer of Dull superiority and worth.

It will be a pleasure to furnish the location of the plant nearest you.

ASK TODAY

THE RAYMOND W. DULL COMPANY

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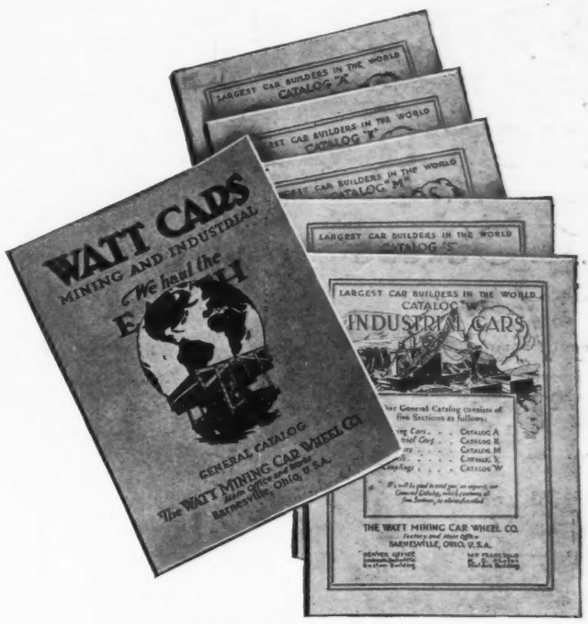
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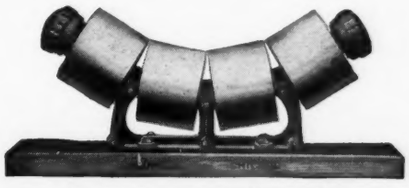

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